

POPULAR Computing WEEKLY

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June 19-25 1986 — Vol 5 No 25

Spectrum Plus 2 is ready to roll

- Amstrad s design for Spectrum Plus 2 is finalised
- Machine will have only 128K Ram
- Prospects for Loki still remote

Full details below and inside

The design of Amstrad s £140 version of the Spectrum the Plus 2 has now been finalised and first units are expected to go into production at Timex s Dundee factory this summer for release in September

The machine conforms to standard Amstrad format in that it has a proper keyboard and built in data recorder but perhaps conscious that too sophisticated a machine could hit sales of Amstrad s own range the company appears to have made few modifications apart from this

Like its predecessor the Spectrum Plus, the machine will have only 128K Ram probably with the extra configured to work as a Ram disc in the same way as the Plus extra memory is

The machine is however likely to have joystick ports and will maintain compatibility with previous versions of the Spectrum It will however have no monitor included

Although the layout of the keyboard conforms more to Spectrum than to Amstrad standard the machine looks like an Amstrad, not a Sinclair Similarly this model at least is

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INSIDE THIS WEEK

on-line artists

Special colour feature looks at what Compunet has to offer Commodore 64 owners and gives Compunet's graphic artists a chance to display their talents

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Look into Logo

PRINTERS SUPPLEMENT

Desktop publishing

Laser printers

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Amstrad Show Report

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Published by Sunshine Publications Ltd 12-13 Little Newport Street London WC2H 7PP Tel 01 437 4343 Telex 296275 **Typeset by** Publishers Reprographics Services Ltd 4 Roger Street London WC1 **Printed by** Greenaway Harrison Sutton Road, Southend-on-sea Essex **Distributed by** S M Distribution London SW9 Tel 01-274 8611 Telex 261643

Popular Computing Weekly. Tel: 01-437 4343.

ABC

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Spectrum's £600 PC

SPECTRUM GROUP is to launch a £600 IBM PC clone next week and as Acorn also prepares a badged version of Olivetti's M19 it looks like becoming open season for the Amstrad PC

The Spectrum machine is a Far Eastern import, and sports 640K Ram MSDOS and GWBasic and twin 5¼ inch disc drives. At the price, and at this specification the Spectrum machine could beat the Amstrad on price and has the added advantage of having the IBM standard operating system, MSDOS bundled. Amstrad's machine will instead have DOS Plus the PC operating system from Digital Research included instead

Acorn's version of the Olivetti M19 looks like being less of a competitor on price than the Spectrum PC. Olivetti prices the M19 high by today's standards and although selling it through Acorn would give it the opportunity to break into the UK educational market it's unlikely to allow Acorn its British subsidiary to undercut it.

The machine also lacks PC standard expansion slots

Alligata offers dream prize

Alligata Software is organising a Prize of Your Dreams summer promotion for its programs. Anyone buying an Alligata tape or disc up to 30 September should receive an entry form for Alligata's competition draw, the prize being goods of your choice to the value of £500

The form covers current stock and Alligata's summer releases which include Meltdown for the Amstrad Pub Games for the Spectrum 64 and Amstrad and Trap Tony Crowther's new game for the 64



Atari special offer on 520

Atari is to sell its 520STM in four different cost-cutting bundles during June and July. The basic pack consists of 520 and disc drive reduced from £548 to £449 while pack two also includes a monochrome monitor and costs £699 as opposed to a normal price of £846

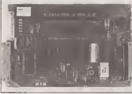
Pack three consists of 520 twin drives and colour monitor and is reduced from £996 to £849 while pack four offers 520 twin drives monochrome monitor and dot matrix printer for £848. This is reduced from £1 045

Announcing the offer Atari UK marketing manager Rob Harding said that the packages would appeal to a broad base of users

Micronet puts its toe in MUD

MICRONET is to launch Shades its own version of MUD in August. Shades will cost 99p per hour and will have no registration fee apart from Micronet membership

Micronet says it has received many requests for a MUD variant, but had problems finding a system that could cope with large numbers of users and would run in viewdata format. These problems have now been cracked, and according to technical director Mike Brown Shades exploits the positive features of viewdata, including colour



RCS Microsystems' new Zero-One-Q single board computer sports 20 character display, 8K of battery – backed Ram and 32K Rom. I/O includes RS232 and 42 parallel lines. Details on 01-979 2204.

AMS launches Magazine Maker digitiser bundle

AMS has combined its AMX Pagemaker and AMX Video digitiser to produce a package called AMX Magazine Maker. The digitiser allows any video that produces a composite signal to take images from a camera or TV. These are then converted to the Amstrad graphics screen and can be used within Pagemaker. The combined packages cost £129.95. The complete package can be used to produce magazine-like layouts

Details from Advanced Memory Systems 166-70 Wilderspool Causeway, Warrington WA4 6QA (0925 4134501/2/3)

New Sinclair Spectrum is ready for production

◄ Continued from page 1

a product of Amstrad's engineers rather than Sinclair's design team. It doesn't use the Astron cards Sinclair had planned for the Pandora and the technology of Loki. Sinclair's advanced version of the Spectrum, remains firmly on the shelf

The machine's interfacing is, however, likely to remain a problem for Amstrad as the Spectrum 128 has both an RS232 and midi, albeit with non-standard plugs while its rivals the Amstrad 464 and 6128 do not. Alan Sugar maintains that the Plus 2 will not signal the death of the 464 but if this is to be the case Amstrad may be forced to limit the new Spectrum's specifications to keep it firmly in the games market.

Amstrad's main professed interest in Sinclair was for the Spectrum's games capability but a games console launch is also a possibility

PCs still pending at the Amstrad show

The latest Amstrad show held at London's Novotel last week suffered from a severe case of PC starvation As expected the Amstrad IBM PC compatible failed to show and to make matters worse the MSDOS upgrade from Vortex appeared to have joined it in Limod Vortex however, confirms that its machine is ready and UK distributor Screens expects delivery in the next eight weeks Amstrad remains mum about its own PC but it appears that some of the larger dealers are currently in negotiation to take delivery of the machine, so the launch can't be too far off Launches this time round were however limited to an Amstrad modem selling at £99 95 This is a rebadged version of the Pace Nightingale which retails for a sum not unadjacent to £99 95

The upgrade Screens intends to distribute is produced by German manufacturer Vortex and is based on the Intel 8086 processor (the faster version of the 8088 used in IBM's PC) It will come with 512K Ram and Digital Research's DOS Plus operating system bundled and the latter will include hooks allowing it to run DR's Macintosh-like Gem graphics environment

Screens isn't willing to fix a price for the upgrade until the first shipments arrive but reckons it will be around £400-500 The company also unveiled an enhanced version of Vortex's expansion board for the 464 – this should also arrive in the next couple of months

Add-on supplier Timatic had been blessed with some new arrivals, although spokesman Nick Young claimed that the hard disc although ready had blown up twice in prototype the other day and therefore couldn't be present He did however promise that the non-incadescent production versions would be very cheap In default of this the company's main exhibits were the 'Bigdisk' duo – one megabyte (unformatted) 5½ inch discs for the 8256 (£209) and 8128 (£249) Both of these work in conjunction with the company's Camelion software program that will allow Amstrads to read and write MSDOS format discs

Former Spectrum specialist DK Tronics was offering a range of Amstrad 464 expansion devices including speech synthesiser Ram expansions, light pen and 256K silicon disc The latter retails at £99 95 the same price as 256K configured as Ram

EMR had a combined hardware/software music package on display This consists of Miditrack Performer software and midi interface, the complete package costing £129 95 for 664/6128 version and £139 95 for 464 The system is claimed to work with any midi instrument



'Of course, the cardboard goes limp in hot weather'

New Star Software's William Poel made a more overt attempt to enliven proceedings by claiming that he would unveil a low-cost PCW8256/8512 lookalike at the show Desperate newshounds reporting to the stand were aggrieved to discover that the 'lookalike' was a cardboard cut-out model a number of which he'd had printed up for the show

To prove we can take a joke we'd just like to point out that New Star is selling dBase II at £395 while First Software retails it at £119 95



Budget game prices drop down to 99p

Budget games manufacturer Central Solutions has slashed the price of its range to 99p According to a Central spokesman the company is reacting to the current stampede into budget titles, which has seen Firebird increasing its profile and the likes of US Gold and Mikro-Gen joining the fray

Central's price cut also affects its ten game packs which were priced at £5 95 and £6 95 and are reduced to £4 95 each The company says that it can still make a profit on these prices and feels the cuts should increase its market share drastically It intends to maintain the low prices, and re-released 12 back-to-back adventure games tapes at 99p each at the beginning of this week



THE MAN in the photo is Vick Pearce, developer of the Commtel-X package for the Amstrad PCW The package consists of modem that supports Email and viewdata, dual serial and Centronics interface, Camm + software and an Easylink subscription form. It costs £286 35, and is claimed to be incredibly easy to use But if this is the case, why's he trying to stick that interface there?

Telephone engineers should phone him on 0992 541118

New games house

Andrew Wright has left Activision to form a new company Thalamus which will be the games software arm of Newsfield publisher of Zzap and Crash According to Wright Islington-based Thalamus is a separate company within the Newfield group and will be managed independently

Wright intends to release four titles by Christmas one of them being a tie-in, and products he says, will be of a high quality 'You won't ever see us producing a £1 99 game adding a poster and a sticker and putting it out at £9 99' he says Although he claims to have products ready he doesn't intend to give any details until later in the year

First plans expanded range

First Software and Publishing, which recently announced an Amstrad PCW8256/512 version of Ashton-Tate's dBase II at £119 95 is also to sell the program on the Commodore 128 and Tatung Einstein But according to First boss Sarah Galbraith the company has no plans to release the program on the Amstrad PC when it is launched

First has an exclusive UK licence from Ashton-Tate to market CP/M versions of dBase at the current low price but the latter company is highly unlikely to be interested in cutting the cost of its IBM PC products

First will however be launching a £49 integrated software package for the PC in the summer this will consist of spreadsheet, word processor graphics time manager diary planner and forecaster and will effectively be a re-issue of an integrated suite previously marketed by Peachtree

Product News

Saga bundles WP program

Saga Systems is to bundle its new word processor, The Last Word, with its Saga Elite and 2001 Spectrum add-on keyboards. In addition the keyboards will come with an offer of £20 discount on the Centronics GLP printer.

The Last Word sells on its own for £13 95, and features an 80 character display, full on-screen help facility, calculator and a wide range of printer and disc drive options. The normal price of the Centronics GLP which has both Centronics and RS232 interfaces NLQ mode and top speed of 120 characters per second normally costs £199 95. The Saga Elite now costs £69 95 while the 2001 which has an infra-red connector, costs £119 95.

Details from Saga Systems 2 Eve Road Woking Surrey GU21 4JT (04862 22977)



Filing cabinet for 3inch discs

Micro Interface is now supplying the 3 inch Filing Cabinet a ten disc box that fans the discs out neatly when opened. It costs £5 95

Details from Micro Interface, 84 Talbot Road, London N6 4RA (01-340 0310)

Build your own Amstrad PCW8512



CITADEL is offering an upgrade kit allowing you to convert a PCW8256 into an 8512 for £189 95. This consists of a Ram expansion and second 3 inch drive both of which are fitted internally.

Details from Citadel Products 50 High Street Edgware Middx HA8 7EP (01-951 1848)



Epson issues a technical manual

Epson is to sell a comprehensive technical support manual covering both its printer and computer products. The manual gives detailed specifications on the products including news on the latest Rom upgrades and is intended to provide users with full information on their machines. The manual comes in eight separate sections at £10-12 each.

Details from Epson UK Dorland House, 388 High Road, Wembley, Middx HA9 6HUH (01-902 8892)

Diary Dates

JUNE

24-26 June
Computer '86
G-Mex Exhibition Centre, Manchester
Details: Business and industry computer show. This exhibition was formerly known as the Northern Computer Show
Price: Free entry by business registration.
Organiser: Reed Exhibitions, 01-643 8040

28 June
Bracknell Computer Show
Coopers Hill Community Centre Bracknell Berks.
Details: Software and hardware for the Dragon, Commodore C16, Plus 4 and Vic 20
Price: £1 adults, children and OAPs 50p
Organiser: John Penn, 04203 5970

JULY

15-18 July
PC User Show
Olympia, London
Details: Hardware and software for IBM machines and their compatibles.
Organiser: EMAP, 01-608 1161

24-27 July
Acorn User Exhibition
Barbican Centre London
Details: Hardware software and peripherals for the Electron BBC micro and Master machines.
Trade only 10am-1pm on 24 July
Price: £3 adults £2 children, £1 discount for advance sales
Organiser: Editionscheme, 01 349 4667

SEPTEMBER

3-7 September
Personal Computer World Show
Olympia, London
Details: Software and hardware for home educational and business computer users. For the first time this year the show is to be organised in three separate halls – business games and education
Price: £2.
Organiser: Montbuild 01-487 5831

8th September
Official Commodore Computer Show
UMIST Manchester
Details: A wide range of Commodore hardware software and peripherals. Formerly the Commodore Horizons show
Price: £3 adults, £2 children £1 discount for advance booking
Organiser: Database Publications 061-456 8383

26-28 September
Electron and BBC Micro User Show
UMIST Manchester
Details: Software hardware and peripherals for the Electron, BBC micro and Master machines. Produced by Acorn
Price: £3 adults £2 children, £1 discount for advance booking
Organiser: Database Publications, 061-456 8383.

OCTOBER

30-31 October
Hampshire Computer Fair
Guildhall Southampton
Details: Business computers and communications.
Price: Free entry by business registration
Organiser: Testwood Exhibitions, 0703 31557

NOVEMBER

22 November
The 6809 Christmas Show
Royal Horticultural Hall, Westminster London
Details: Dragon software and peripherals
Price
Organiser: Microdeal 0726 6820

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.


EQUINOX
Spectrum/Amstrad £9.95
MIKRO-GEN
Unit 15 The Western Centre
Western Road
Bracknell
Berks.

Letters

Star Letter

Satisfaction

Thank you for publishing the letter from Chris Moore in *Popular* May 22 I too am an Enterprise owner and, as usual, I was reading through the letters in a rather smug way

I own a computer not only with an 'ultimate Basic', but a Basic that works (cf Atari) I also have had no problems getting a response from Enterprise Computers, almost always by return of post or getting the machine fixed (cf Amstrad and Sinclair)

Okay, I admit it's not perfect Having used it for on average four hours a day for about four months it broke down I put it back in its box and posted it for repair on Monday afternoon On Saturday morning it was back on my desk – the same week!

Sometimes as a minority computer owner, I get the feeling I don't exist – and you may bear in mind that we probably own unfashionable computers because we are interested in computing not fashion this probably means we are more likely to buy computer journals

Of course most of the interesting listings you get are for utilities something you are less likely to receive from Enterprise owners as this machine comes equipped with most of the requirements for programming

R Mishra
Cambridge

Upgrade woes

In January I sent my 48K Spectrum to Sinclair Research to have it upgraded to a Spectrum Plus My computer was returned four weeks later but unfortunately on testing it I discovered that it had only 16K of memory so I spent £3 60 on postage and returned it to Sinclair

Two weeks later my computer was returned but this time when I switched it on the screen remained blank and refused to display the copyright message So I spent another £3 60 and returned it again with a covering letter asking for a refund of postage costs

Two weeks later my Spectrum came back This time the screen was still blank the heat sink was lying separately in the box the "loudspeaker" was loose in the computer casing and the PCB was held down by only two screws

I was going to return it again when I learnt of the Amstrad/Sinclair deal

Please could you advise me what to do with my once perfect Spectrum which lasted three and a half years without a single fault and now seems to be finished by Sinclair's repairs department

Peter Ball
Preston

Try writing to SRL, which is what remains of Sinclair Research is now called, at Milton Hall Milton, Cambridge, CB4 4AE (0223 862661) explaining your problems and asking for advice

QL in print

I have just bought a Centronics GLP printer for my QL It's an excellent printer, ideal for the machine For £160 you get tractor and friction feed serial and parallel interfaces a host of typefaces, a good NLQ and complete compatibility with the QL and its bundled software (including *Easel*) The ribbon is a Brother M1009 and Commodore MPS803 type so is easy to obtain However the state of euphoria I'm now in was only reached after two printers and several wasted days To save others from similar frustration I offer the following information

There are in fact three versions of the GLP with different firmware the original IBM, an EPSON RX80 equivalent and the QL version The manual with each is for the IBM version and in my case no extra information was given about the changes in the others

If you use a centronics interface you should be able to use any of the variants The problem arises from the QL's need for a 8-bit and no parity serial setting not provided on the IBM version

The QL version's character set one is 100% compatible with the QL and codes above 192 (decimal) are non-printing Character set two repeats above 127 The DIL switches are slightly different as follows

Switch		Function	On	Off
2-3		Line Feed Spacing	[illegible]	[illegible]
1-8	1-8	Communications type		
on	ON	Serial, even Parity		
on	OFF	Serial, odd Parity		
off	ON	Serial, no Parity		
off	OFF	Parallel		

The Epson version has international character sets and an italic typeface The switch settings are completely different and I can't offer much advice on this Switch 2-2 is the NLQ switch and the communications switches are possibly as above

Micro Anvika of Tottenham Court Road London, sold me the printer with the switches set for the QL and a phone call to Centronics revealed the switch functions

My only criticisms of an otherwise perfect accompaniment to the QL are apart from the terrible documentation that thick single sheet paper gets caught on the lid which necessitates its frequent removal Also the extra QL characters do not print in NLQ, rather they appear as emphasized Graphic characters or an italic mode could surely have been added to the QL version

Steve Lee
Woodford Green
Essex

Commodore clubs

I am starting a couple of user groups with a friend for Commodore 64 and C16 owners We will accept inquiries from anywhere and we will reply instantly There will be no membership fee

The user groups will be aimed at swapping hints and tips for software, and writing software listings Anyone wanting to join the C64 group should write to me at the address below The address for the C16 group is David Hill Commodore User Group 61 Madeley Road Havercroft nr Wakefield West Yorkshire Please could inquirers enclose an SAE for reply

Stephen Butterfield
Commodore User group
51 Madeley Road
Havercroft
WF4 2PJ

Back to Basic

I have read with interest the growing debate that seems

Puzzle

Puzzle No 213

Professor Otto Hex was responsible for ordering the new paving slabs for the college quadrangle Unfortunately due to his absent mindedness he has mislaid the paper on which he had written the details required

However he does remember the following

(i) The quadrangle which is nearly but not exactly square is rectangular in shape

(ii) The length and width are both an exact number of feet and the area (in square feet) is a five-digit number ending with a 4

(iii) This five-digit number contains within it a run of three consecutive digits in ascending numerical order

(iv) The total area is also an exact number of square yards

What is the smallest that the quadrangle can be? (Note that by almost square we mean that the longer side is no greater than 10% more than the smaller)

Solution to Puzzle 209

The first time that there is an equal number of both calls for counts greater than one hundred is on the count 153 On this call "Fizz" and "Buzz" will both have been called forty-one times

```
10 FIZZ=0:BUZZ=0
20 N=1
30 N$=STR$ N
40 F=0: B=0
50 IF N/5=INT (N/5) THEN F=1
60 IF N/7=INT (N/7) THEN B=1
70 FOR M=1 TO LEN(N$)
80 IF MID$(N$,M,1)="5"THEN F=1
90 IF MID$(N$,M,1)="7"THEN B=1
100 NEXT M
110 IF F=1 THEN FIZZ=FIZZ+1
120 IF B=1 THEN BUZZ=BUZZ+1
130 IF F=0 AND B=0 THEN PRINT ;N FIZZ,BUZZ
140 IF F=1 AND B=0 THEN PRINT;"FIZZ",FIZZ BUZZ
150 IF B=1 AND F=0 THEN PRINT; BUZZ ,FIZZ,BUZZ
160 IF B=1 AND F=1 THEN PRINT; FIZZBUZZ" FIZZ,BUZZ
170 IF BUZZ=FIZZ AND N>100 THEN STOP
180 N=N+1
190 GOTO 30
```

Winner of Puzzle No 208

This week the winner is A M Scott of Grangemouth Stirlingshire who will be receiving £10

Rules

The closing date for puzzle 213 is July 15



FORTHCOMING RELEASES:

JET SET WILLY II – C16/+4, BBC/Electron and Atari.

WHO DARES WINS II – C16/+4.

SAVAGE ISLAND I & II – (A Scott Adams Graphic Adventure) – C16/+4, Spectrum, Cbm 64 and Amstrad

TYNESOFT
COMPUTER SOFTWARE

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Tel: (091) 414 4611

to have started in your magazine lately concerning the usefulness of the Basic supplied with the Atari ST range

As an owner of three different computer systems and my wife owning a fourth I would like to put forward a few observations Of all of the professional software we have, on all the systems I would say that less than five of the programs are written in Basic I would conclude from this that professional programmers don t see Basic as a language to be used for saleable applications software

This I think does not mean that Basic is of no use but that other languages are just more suitable I would suggest therefore that if you have bought the ST with the intention of producing some application that you feel you must write yourself and intend to use in some important way then you should be using the best tool for the job

In fact the more I think about this debate the more it highlights one of the fundamental problems of the computer industry Just why do people buy home computers? The answers to this question are very unclear I bought my first computer purely out of curiosity as to what they were all about I have since progressed to a machine that I think fills my needs well It has taken me three computers however before I realised what I even wanted from one proper word processing a fascination with computer graphics and a interest in the mathmatics of music has led me to the ST I realize there are many more uses In my opinion very few are actually useful in the home Of my three reasons only the word processing is of any real use to me

I have had a great deal of fun and pleasure programming my computers in various languages I even consider myself to be quite advanced at it It is ironically this knowledge though that makes me realise that if I wish to produce anything as advanced as a professionally produced piece of software I would have to devote as much time as they do to do it justice

Having already got a full time jod I can't afford to spend six months to a year eight hours a day achieving something I can go and buy of the shelf straight away

This doesn t prevent me from continuing to dabble just from a hobbying point of view in programming When seen in this light I think that ST Basic meets its requirements adequately It might have been nice if it exceeded its requirements brilliantly but I shall not miss it if it doesn t.

It seems a gross overreaction to me to claim that the machine itself is flawed because its freely given away Basic isn t as good as some people might have liked

Mark Annetts
Richmond
Surrey

Blasting out

You may have noticed that there are not a lot of tape-based magazines and fanzines around these days so I would like to inform you of my own magazine called *Blast It*

This is a monthly mag To receive it, the readers can do either of the following a) Send us a blank tape of C15 size or more plus 30 pence to cover production costs and postage back or b) Send us 90p to cover the above plus the cost of a tape

Jason Roseman
56 Rodlie Close
Stanford le Hope
Essex SS17 8BB

C128 tweak

I am writing to inform Commodore 128 owners about some incompatibility problems they may have experienced when trying to load games in 64 mode

Most programs I have found do not load eg *Mr Do PC Fuzz* can be loaded by simply pressing the *Caps Lock* key down and then loading as normal

So far this works for all Anirog titles *Mr Do* and *Goonies*

Also you might try switching to lower case in 64 mode and pressing *Caps Lock* for an interesting effect

Jonathan Dale
Codnor
Derbyshire

High speed

Of all the problems inherent in the Commodore computer systems, the one which causes most angst is certainly the speed of the disc drive. The 1541 while reliable and intelligent uses a serial system which is designed for economy rather than speed. As a result, Commodore 64 owners tend to go pale when they see the speed of say BBC disc systems.

There have been many attempts to speed up the Commodore DOS, ranging from cartridge-based operating systems such as Quick-Disc, to software packages which require you to produce "fast-load" back-up copies of your software. One of the latest attempts is the Cockroach Turbo-Rom.

Cockroach's previous attempt to speed up CBM disc operations was a software-based system. This idea consists of a single 8517 Rom chip in a socket attached to a toggle switch. Fitted instead of the normal CBM 64 or SX-64 kernal it claims to be able to speed up loading, saving and verifying times by a factor of five. There's a price to pay for the extra routines, all the cassette and RS-232 code has to be left out to allow space for the new kernal. Fortunately, the toggle switch allows you to switch off the Cockroach Rom and return to the original kernal, a copy of which is stored in the Rom.

Installation is straightforward and should present no problems. The toggle switch can be mounted permanently, or left protruding from the cassette port. Syntax for all routines is largely similar to standard syntax in many cases abbreviated. However, there are some useful additions: for instance on saving the Cockroach Rom checks to see whether there is sufficient space on the disc to save the program first, rather than just ploughing ahead and coming up with an error message if it runs out of blocks.

The *Save With Replace* problem, which has been the subject of great debate within the user groups, has also been circumvented – the Cockroach Rom always scratches old files before saving new ones in the same name. There's also a screen dump feature, although this is disabled if hi res or multicolour screens are being used.



Lastly the Turbo-Rom contains many disc utility features which are familiar from utility cartridges such as *The Final Cartridge* and Robtek's *Turbo*: read disc error channel, display directory, initialise disc, validate disc, rename file, fast format and so on. Most of these commands are single characters preceded by an ampersand. For heavy disc users, or multiple disc drive owners who wish to renumber devices without making hardware changes, the Turbo-Rom would seem a worthwhile idea. Since it can be switched off at any time there's no worry that it will interfere with your software (although apparently some programs, such as *Easy Script*, have loading routines which are incompatible with the Turbo-Rom). Well worth considering.

Chris Jenkins

Product *Cockroach Turbo-Rom* **Micro** CBM 64, SX-64 **Price** £19.99 **Supplier** Cockroach Software, 20 The Crescent, Machen, Newport, Gwent. Tel (0633) 4404354

An irresistible combination

Computer topics have their day – artificial intelligence integrated business packages, real-time control – but computer graphics goes on forever In the past graphics terminals have tended to be expensive but now the QL is getting in on the act, thanks to the cutely-named *TechniQL* package from Talent

The features of the software coupled with the recent bargain price of the QL make the combination irresistible for anyone with a need for a drafting and design package at a budget price

TechniQL features full colour 65 000-dot resolution menu and keyboard control and just about everything else you could want

Obviously the theoretical size of documents is much larger than the screen display and any printer capability so the screen acts as a window on to the full document (in fact you ll run out of memory before you get up to the limits of the software)

Printouts can be handled as multiple sheets which can then be stuck together

The software is very simple to use You either select the required item from menus (ESC gets you out of fumble-fingered selections) or direct operations with a series of two-letter mnemonics

The drawing of lines boxes circles and filling shapes is done at present with the cursor keys or a joystick You can create your design on any or all of eight layers which can be thought of as transparent overlays to be added or removed from the work in progress

This allows you to build-up a design in stages Print-outs can selectively include or ignore various layers

Other features include panning, zoom in and out, on-screen rulers and multiple cells You can think of cells as small designs which can be created, edited and stored for use in other larger designs This feature allows you to create a library of building blocks' such as map symbols machine components, circuit board sub-designs etc

At present *TechniQL* has some limitations It doesn t support 3D graphics and transformations, and it will only drive an Epson-compatible dot matrix printer

While this sort of output is fine for certain applications, serious users will almost certainly want output to a plotter and input by keyboard or joystick leaves a lot to be desired Therefore support for a mouse or graphics tablet would be welcome

Talent is aware of these problems and is promising continued development of the package to cover these areas

So who will use *TechniQL*? Anyone wanting two-dimensional design facilities at a low cost

A QL decent dot matrix printer and TechniQL comes in at £500 Quite simply there s nothing else on the market to touch this combination

Duncan Evans

Product *TechniQL* **Micro** Sinclair QL **Price** £49 95 **Supplier** Talent Computer Systems Curran Building 101 St James Road Glasgow G4 0NS

Executive toys on the ST

Program *Cornerman* **Micro** Atari ST **Price** £29 95 **Supplier** Microdeal Box 68 St Austell, Cornwall PL25 4YB

Cornerman for the Atari ST series is a multi-function accessory for use on the GEM desktop Written by the American company MichTron, it has been published in the UK by Microdeal and retails at £29 95

There are eight accessories available although the value of four of them is open to question What you get for your 30 quid then is an Ascii table, calculator notepad dialler and phone log sliding block puzzle, clock and DOS window

In order to utilise *Cornerman* all the files on the disc supplied must be copied across on to your start-up disc or wherever you keep your desktop accessories If you have a 520ST and TOS is still on disc then don't bother to buy *Cornerman* as there isn t enough memory left to run anything but the smallest of programs

The Ascii tale simply gives a list of the ST character set plus codes This is of course just what you d buy a desktop program for

Equally worthless are the Clock feature and the sliding block puzzle The DOS window function allows you to exit GEM temporarily and call up a program for manipulating TOS before returning to the GEM system

The calculator is useful mainly because it offers facilities nor normally found on the push button variety You can work in decimal, binary, octal and Hexadecimal Uppn these numbers you can perform Boolean logic if you so desire, as well as displaying word values (16 bit), double and quad word values

The notepad accessory enables you to store short notes along with time and date, on disc for later reference

And so to the dialler and phone log accessories and to problems Unfortunately it s set up for the US telephone service and you must have a modem connected Enquiries to Microdeal revealed that although you can reconfigure the dialling format you can t get it to deal with the UK telephone system

This makes it completely useless Microdeal is now looking into this but don t hold your breath for a possible conversion

As the program stands in its current format, in essence you re paying £30 for a calculator and a notepad The program looks good but flatters to deceive, and at this price is really not recommended

Duncan Evans

Through the jungle

Richard Hare examines the friendly, fervent etmosphere of Compunet

It is a strange and sorry fact that only a small percentage of Commodore 64 owners have access to or have even seen the Compunet database.

Those that do have the Compunet modem have experienced some of the benefits talking to fellow users discount prices on major software houses' programs a cornucopia of free user software music and graphics plus the opportunity to market your own programs on Cnet

Compunet is rare among British databases since the greater part of its content is created by the users themselves

The network can basically be divided into two areas the first section comprises mainly of commercial and Compunet s official software the Compunet editorial MUD and so on The other area is reserved for programs, graphics, music clubs gossip columns etc put up on to the system by users via their modems Aptly named 'The Jungle' this section covers a vast area of Compunet and it would take you the best part of the day to go through it all

Exciting aspect

Constant change is an exciting aspect of The Jungle and there is something new to see every day The quality of The Jungle material is remarkably high and it is quite stunning how many talented programmers graphic artists and musicians there are on Cnet Just recently two netters, aka Stoat and Tim programmed an animated representation of a concert to accompany the tune from Firebird s game *Thrust*, with full co-operation from the composer Rob Hubbard (Rob is a Cnet subscriber and all of his music is available on the system free of charge)

Sport Aid

Uploading a freebie like Stoat and Tim's may seem a pointless exercise but this could not be further from the truth Apart from improving your standards in whichever field of computing you may pursue uploading your work on to the 'net could result in your talent being realised by thousands around Britain, including perhaps several software houses

This is exactly what happened to Bob Stevenson (I D RS4) and Doug Hare (MACH81) who have both uploaded graphics and programs on to Cnet and as a result a lot of their work has graced the pages of various magazines Recently they have been working with Activision on a new project and several other companies are interested in signing them up to write software

Electronic mail

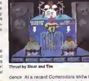
Working as a team Doug and Bob have now adopted the business name Kinetic Design although many refer to them as Jocksoft owing to their Scottish origins! Communicating with other people is one of the most rewarding aspects of Compunet

Jane s Place

One method of contacting another user is simply to send them a message with the mailing facility Once you have typed your letter using the inbuilt editor program (low resolution graphics may be included) you can send off your message to another user which they receive instantly The amount of mail you receive usually varies directly to the number of people you get to know on Cnet, so your mailbox is likely to be a bit empty during the initial days

When you connect to Cnet a small pillar box indicates that you have mail and if you receive mail while on line you are informed of this at the top of the current directory you are on Compunet mail is always a welcoming sight when you log-on (perhaps because you know it won t be a bill) especially so on your birthday or at Christmas when you may receive a few electronic greeting cards!

However, communication between users need not be limited to mail correspondence



Thrust by Stoat and Tim

At a recent Commodore show held at the Novotel crowds of interested people surrounded the Compunet stand The people who visited the stand would probably have seen Cnet s new scrolling chat system, Party-Line Basically Party-Line enables you to converse with several users at a time

Team spirit

Chatting on Party Line is very similar to using a CB Audio and indeed many users have adopted a special dialect whilst speaking on Party-Line! Late night/early morning chats are usually crowded and at around half past one a few weeks ago Jeff 'Yakus' Minter, Tony Ratt Crowther and Archer (no alias) MacLean were among the people chatting on Party-Line



Jungle Eye by Rob Stevenson

Party-Line is a very fast system which is well presented and incorporates several useful commands Its predecessor Chat-On-Line is slower to use but can still be a hive of activity when it picks up the pace

In this article I ve tried to give a brief insight into a few aspects of Compunet which I particularly enjoy

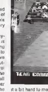
I think, however that Cnet's greatest strength is the team spirit, which always seems to be present – a sort of friendly, fervent atmosphere

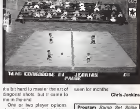
On the beach

A great opportunity to play volleyball without the attendant sweat and strain *Bump Set Spike* is one of the best sports simulations it has been my pleasure to play. Not I hasten to add, that it has the graphic sophistication of a *Summer Games* but unlike that compilation of joystick-waggling exercises *Bump Set Spike* is great fun.

The game which features selectable Rob Hubbard music (get down!) or sound effects, can be played on either indoor or beach backgrounds. I found the indoor court better because the ball sometimes gets lost among the seaweed on the beach. There are nine difficulty levels which affect the speed of the ball and the amount of 'bounce'. The faster levels are a lot more fun since very good rallies can be built up.

Each team features two players and you can select which is under joystick control by hitting the fire button. According to whether you are in an offensive or defensive mode, the fire button can also be used to control the hit power diving and the 'spike' move – batting the ball downwards over the net rather than hitting it up into the air. The position where the ball will land is marked by a fast-moving cross, and you must position your player in the right place to make an accurate return. I found it a bit hard to master the art of diagonal shots but it came to me in the end.





One or two player options, cheeky little speech-bubbles and an overall combination of great gameplay and whacky details make *Bump Set Spike* one of the most fun games I've seen for months.

Chris Jenkins

> **Program** *Bump Set Spike* **Micro** CBM 64 **Price** £1.99 **Supplier** Mastertronic 8-10 Paul Street, London EC2A 4HJ

The big bang

On the back of this simulation of contemporary combat in Europe's instruction booklet it says of the events portrayed "They must never be allowed to happen". On this evidence it is doubly true because though Nato only has to survive for 30 days before Warsaw Pact supplies run out, lasting even that long seems almost impossible. In such circumstances chemical and even nuclear strikes seem the only option.

Theatre Europe is a direct descendent of the SPI style board wargame, based on masses of research and with a heart of hard facts. The sense of the hexagonal grid is banished by brilliantly smooth gameplay though. The map command screen is cursor controlled with information on units appearing immediately. This screen also serves for supply purposes at the end of each round, a vital consideration because armies without equipment can't attack.

The other major screen is for air and special missions. Air power is allocated to reconnaissance, air superiority, interdiction and counter air, while the special missions include those all important chemical and nuclear options – though using these can result in the end of civilisation and a generally low rating as a general!

There is also a third, optional section, the action screen which contains an arcade game to modify combat bonuses depending how well you do on it. It's obviously been included to try and tempt people who've not wargamed before but I don't think that many hard core computer commanders will want it.

The program runs incredibly smoothly and the accompanying booklet is packed with facts and carries a persuasive moral. My one reservation about the game, other than the action screen which can be ignored, is that the play balance is wrong. In a two player game the East may be less dauntingly omnipotent but with the Spectrum in charge of the Red Army all we can do is paint our windows white and wait for the big bang!

Paul Svycarsky

> **Program** *Theatre Europe* **Micro** Spectrum 48K **Price** £9.95 **Supplier** PSS, 452 Stoney Stanton Rd., Coventry CV6 5DG

Warrior of the future

Well, guess what folks? Adventure Soft Ltd (formerly Adventure International) have finally released their first adventure under their new name and guess what else? It's great!

The plot may not be very original but then what is nowadays? Nevertheless where the originality of the story leaves a lot to be desired the playability of the game more than compensates.

Adopting the role of a courageous resourceful warrior of the future trained in all the martial arts. Your task – to infiltrate the mighty Arcadian Empire find agents of SAROS (Search and Research of Space) and glean from them secret codes thus enabling you to defeat the queen computer which (didn't you just know) controls the minds of the Arcadian troops.

Disguised as a merchant, you must travel to different planets before you finally find all the various parts of the code needed. You do this by travelling in the Caydia, your own custom built spaceship, complete with cleaning droids, Hcap rations, laser sword (come back Luke Skywalker) and other essential items you will need for your quest. One very nice touch was the way certain objects are actually written into the location descriptions so my advice is to read and examine everything carefully.

The version I played was text only (BBC & Electron) but being a purist adventurer at heart, this suited me fine; however the Spectrum graphics are superb and for once do seem to add something to the game.

As a parting shot I would like to congratulate Mike Woodruff and Co for producing an excellent adventure and I look forward to seeing their next release entitled *Temple of Terror*. Meanwhile expect CBM64 and Amstrad versions of *Rebel Planet* soon.

Roger Garrett

> **Program** *Rebel Planet* **Micro** Spectrum/BBC **Price** £9.95/£7.95 resp **Supplier** US Gold, Unit 10, The Parkway Industrial Centre, Henage St, Birmingham B7 4LY

Addictive romp

Mastertronic are really coming up with some good software now and Richard Darling, author of the latest offering *Master of Magic*, has come up with another pleasant surprise

Your character has been dragged beneath the surface of a dark pool by the hand of Thelric, the M of M, who plunges you into a strange mystical world of Magic and Evil Ho-hum another Sunday afternoon in the country! But he has plunged you because he wants you, yes you to retrieve the lost Amulet of Immortality no less But all this is just window-dressing for the game proper which involves your character in plenty of monster-bashing and scroll- and potion-getting

The screen is divided into four main windows At screen top-left is a very small plan-view of your immediate surroundings, a line-of-sight view that opens out realistically as you round a corner or enter a room to show the inhabitants or objects At the bottom of the screen is an information window showing a graphic representation of the monster at the current location as well as other details such as adjacent doors and staircases These graphics are very colourful and detailed, which is just as well as those in the plan-view are merely character-sized with you merely a square blob

The largest window, top right, displays a scrolling commentary on what is happening to you, with a read out of game-time and barometers for your status The final window displays a number of options which change depending on prevailing conditions Nearly always present is the *Run* option allowing you to get clear of monsters and other threats – but you may also be offered *Examine Pick up Drop*, ask for an *Inventory* and other such adventure-like commands You may also *Open* and *Close* doors a they are chanced upon – there are also the *Cast* and *Attack* options each of which lead to a sub menu of spells or a choice of what to attack (you know several spells at the beginning and may for all I know, pick up new spells as you progress) Time stands still while you are in the menu so that attacks never become too sweaty

Much of the adventuring feel is here – you start off with no weapons but not far from the start you ll be able to tackle a monster that is carrying a dagger and you can pick up this once you ve defeated it Problems such as this abound and while the complexity of full-blown arcade adventures won t be found here there s quite enough to keep the player occupied

All in all *Master of Magic* is a good role-playing game While the program is not in the same class as some of the more expensive offerings around at the moment, it s certainly an addictive romp through monster infested and treasure-laden dungeons, and a jewel in the budget crown

Tony Bridge

Program *Master of Magic* **Micro** Spectrum **Price** £2.99 **Supplier** Mastertronic 8-10 Paul St, London EC2.

Assorted nasties

The year is medieval – and goblins ghosts and witches rule the domain of all that is evil in the world of *Dragonhold*

You play the part of a little animated character that goes on a long quest in search of the Elixir of Life – however to stop the noble fellow from completing his task is a selection of assorted nasties

If you are a Dungeons and Dragons freak then you will be at home with this game as it has a similar feel Your status window displays your current attributes with the most important being Endurance when this reaches zero you ve had it!

You move from screen to screen across the land encountering beasties who may well try to kill you the most annoying of which I found to be the Vampire Bat which dogged me throughout I found a crucifix and tried to use it on the thing only to find it had no effect I took the object to a Vicar who promptly mugged me

I started getting on much better in the game when I started talking to characters – you ll find this gets you quite a bit of help one way and another

Altogether *Dragonhold* is a nice combination of arcade adventuring and conventional verb/noun fare Highly recommended

Mathew Palmer

Program *Dragonhold* **Micro** QL **Price** £19 95 **Supplier** Computer Systems 12 Bannerdale Rd, Sheffield S7 2DJ

Disaster to disaster

Alter Ego the male version, proved curiously compulsive in the *Popular* office a couple of weeks back Now Activision has released the female version and it s having the same effect

Alter Ego is one of the Activision oddball releases You get to choose a personality and then 'live' it through seven stages of life from babyhood to old age By choosing 'experiences from a series of on-screen icons and reacting to them in a number of different ways the program analyses your personality and charts your progress through life

The female version uses many of the scenarios from its male counterpart (some slightly adapted) so is not substantially different But at least it doesn t assume you re going to spend your life tied to the kitchen sink

The program probably appeals most to the egomaniac side of one s nature Getting the chance to do all the things you wouldn't in real life - writing a novel marrying eight times skipping school and all sorts of wild sexual experiences (the program carries a parental warning notice) – is not only huge fun but also seems to bring out the rebellious streak in everyone playing it

There is a generous helping of (very American) humour running through the game, but don t expect your life to be all happiness and derring-do Much of what happens will depend on how your personality has shaped according to the program in previous stages my latest 'life lurched from disaster to disaster Widowed at an early age my adopted children inexplicably disappeared in the disc changeover from stage six to stage seven and I died a cocaine addict and alcoholic

Christina Erkine

Progam *Alter Ego (Female)* **Micro** Commodore 64 (disc only) **Price** £27 95 **Supplier** Activision 23 Pond Street London NW3



Aladdin's cave explored

Tony Kendle offers some tips for Artic's arcade adventure, and promises undying support for Commodore 64 owners

A short while ago Artic released two new programs for the Amstrad CPC machines *Obsidian* and *Aladdin s Cave* unusual in that for once they weren t just conversions of established Spectrum games but actually made an attempt to exploit the features of the Amstrad

Of the two the most successful to my mind was *Obsidian* – the gameplay was challenging with fast action, devious puzzles to complement your reflex skills and the graphics were excellent Set in a space age craft a clever combination of colours and design created an almost 3D metallic quality that only Virgin s *Strangeloop* and Mikro-Gen s *Equinox* have been able to match

Aladdin s Cave was more standard fare principally just a platform game of few locations However it did have one or two intriguing qualities and new touches that made it enjoyable and I found myself returning many times for another go One particularly novel feature is that your character has the power to be able to change into a variety of different beasts in order to best tackle the obstacles presented Now after a decent interval of time I feel it would not be unfair to release the tips for this one

There are five characters that you can assume in all Only the Man shape can be used to collect objects only the Monkey shape can climb poles the Parrot can fly the Dolphin can swim and the Genie can float left or right

You automatically turn into the Dolphin when in water, but the other characters are selected by pressing the Down and Jump keys simultaneously Up and Jump together will turn you back into a man

The games rooms are laid out as follows for those of you who wish to make a map

Menagerie – where you must collect fruit for the monkey Exits are to the top right for the Chandlers room and bottom right to the Technocave

Chanalers – collect fish for the Dolphin Exits top left to Menagerie bottom left for Technocave and bottom right to Cellar

Technocave – collect iron bars to help you in the Preciple and the Guard Room Exits are bottom left – Chandlers mid left – Menagerie bottom right Aladdin s Cave

Cellar – collect the feather for the Parrot. Exits are top right to the Chandlers bottom left to Passage and roof to the Aladdin s Cave

Aladdin's Cave – collect diamonds for the Genie Exits are bottom left to Technocave, bottom to Cellar and top right to Preciple

Passage – bottom left to Cellar and bottom right to Chamber

Chamber – bottom left to Passage roof left to Geyser, roof right to Desert

Preciple – top left to Aladdin s Cave bottom right to River

River – bottom left to Preciple bottom right to Geyser

Geyser – bottom left to River, top right to Desert ground right to Chamber

Desert – top left to Geyser, ground left to Chamber and bottom right to City

City – collect the diamonds to bribe the guard Exits are bottom left for the Desert and bottom right for the Inner City

Inner City – exits are top left for City top right for Guard Room and bottom right for Spell Chamber

Guard Room – Collect the arrows to move the guard and kill the wizard Exits are bottom left to the Inner City and bottom right to the Wizard s Lair

Spell Chamber – Collect the spells to kill the wizard Exits are top left to the Inner City and top right to the Wizard s Lair

Wizard's Lair – the conclusion of the game To kill the wizard you need both the spells and the arrows Exits are top left to Guard Room and bottom left to the Spell Chamber

Have fun but I warn you it still won t be easy and I have yet to come near that wizard!

Staying with the Amstrad CPC for the moment Stephen Hulley of Hemel Hempstead has written in with a routine that gives infinite lives on US Gold s *Bounty Bob Strikes Back* Stephen writes, The routine also lets you see the name of each level of the game Just type in the listing rewind the game tape to the beginning and type RUN Then follow the on-screen instructions The routine should also work on the 664 and 6128 but I haven t tested it on these

```
10 REM BOUNTY BOB STRIKES
      BACK !
20 REM AMSTRAD CPC 464
30 REM INFINITE LIVES
40 REM STEPHEN HULLEY 1986
50 MEMORY &3900:CLS
60 LOAD"":LOAD"!",&4040
70 A=&8900
80 FOR N=0 TO 51
90 READ D$:POKE A+N,VAL
   ("&"+D$)
100 NEXT N
110 CLS:PRINT 'PLEASE WAIT'
120 CALL &8916
130 DATA 21,6E,06,36,18,2C,
    36,05,C3,40,00,21,34,BD,
    36,00,2C,36,89,C3,04,BD
140 DATA F3,11,40,00,21,00,
    B8,01,37,02,D5,E5,C5,78,
    21,48,40,36,72,2E,4E,36
150 DATA 92,6C,ED,B0,37,C3,
    2C,B8
```

The Amstrad version of *Bounty Bob* was technically competent but completely flat and uninspired The graphic charm and atmospheric colour scheme of the original seems to have been abandoned and even more of a pity, the special codes that allow access to different levels of the game also seem to have been dropped

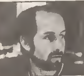
This may be due to memory constraints but it is a stark lesson on how to turn a successful and entertaining program into just another platform game clone Still having said that the layout of the various screens is in some place cunning to the point of being fiendish and I for one will find these extra lives extremely worthwhile

Finally this week here are a couple of pokes for the CBM 64 version of *Underwurlde* from a regular contributor Chris Eastwood of Witney To get the tips to work in their present form you must have access to a reset switch useful things and highly recommended to any Commodore owner who enjoys poking their games

Load the game and reset it and then enter the following

Poke 40537 141
Poke 34404 45
Sys 36209 to re-start the game

These have the effect of giving you infinite lives and also disabling sprite to sprite collision respectively



Deep in space

Tony Bridge ventures into the unknown – and looks at a few of the new space operas

A couple of weeks ago we saw some Commodore programs which were set around beaches or the sea. Probably the most fruitful area for adventure plots though is a little higher up in space and after that introduction it's no coincidence that the programs we're going to look at this week are space operas.

Mike Burley is the sum of the brains behind Starcrash Software Systems whose first Survival Simulation for the Spectrum is now ready for your delight. *Starcrash* is *Quill*'d and text-only but the text is, says the press release "So rich that it comes as close as it possibly can to being an interactive novel where the reader's immersion in the atmosphere and involvement in the situations which arise will give a sense of 'on the edge of your seat participation'."

Mike tells me that the adventure has taken 18 months to come to fruition while the text is very loquacious (not necessarily the sign of a great novel) careless mistakes in spelling and grammar occur on just about every screen and these detract a little from the overall impression. If you're thinking of writing an adventure *please* take a little care over punctuation and spelling – such an easily-checked thing can make all the difference to an adventure and put the player in a receptive frame of mind.

Loading is accomplished via the "LOAD CODE" command (I spent half an hour just looking for that long-neglected "CODE" key!) but this belies the fact that the simulation (for this is what Mike calls his adventure) is *Quill*'d. A very well-known title-screen (black and white) leads us to the first part of the game and the first screen of text: "You awake, the acrid stench of burning insulation heavy about you. Showers of incandescence spit and plume in hazy, out of focus flurries of glowing sparking snowflakes. Ever so slowly painfully. Fuzzy memories flit elusively through the concussed synapses of your well shaken brain cells ... And on and on, for another two full screens. But at the end of it all comes the well known phrase or saying "I await your command", and it's back to *Quill*-land to try to match words and phrases with those in the computer's memory.

Starcrash is, as I've pointed out, as much a simulation of survival on a space-going vessel (in this case the crashed Lady Angela) as it is an adventure and this means that descriptions go into great detail in an attempt to create a tangible atmosphere. Most of the time this is successful, though the player is required to wade through reams of rather purple (and not very well spell-checked) prose. It's all very hi-tech while aboard your crashed spaceship but once outside, you'll find yourself in "Impenetrable Jungle adventurers for the use of" Mk II.

Knight Tyme from Mastertronic

Juggling in the jungle

Getting out of the wreck is nicely done, being accomplished in a couple of ways only one of which is the optimum method. As you can only carry four items at a time there's quite a lot of juggling involved in getting the objects to their required position, once out of the ship it proves difficult to get back in so you must SEARCH and EXAMINE every location thoroughly.

The Jungle is pretty hostile and death looms at every corner just waiting for the unwary adventurer.

Starcrash is in two parts the completion of the first part yielding a password to the more difficult second, so there's a lot of adventure to be played. In his location and object descriptions Mike has used a lot of imagination and lifted the general tone of the game far above the usual Quill'd effort – there's a wonderful moment beneath the *Lady Angela* when the "carnage produced by the meeting of ship and jungle, jagged saw blades of metal and wood spear at you from every point of the compass".

Surrounded by the humid jungle, silence unbroken except for the dripping of moisture and the inexorable march of deadly killer ants you are put in mind of the oppressive atmosphere of *Alien* (and strangely *Thunderbirds* though that series was not exactly a horror house).

So there's a lot of adventuring to be done here, and the price of just £4.95 makes the program almost mandatory fare for Spectrum owners (and versions for other machines might be a good idea for the future, Mike).

Starcrash Software Systems is at 1 Walsingham Avenue, West Didsbury, Manchester M20 8WA.

Starcrash was written with a futuristic re-design character set and so was our next adventure *Rogue Comet* from Walrus

Computing This one concerns your efforts as the sole saviour of the human race to plant the Omega bomb in the required position to knock the comet off-course thus missing the Earth

That's the scenario, and the game is typical *Quill'd* stuff very terse descriptions, sharply-drawn graphics, a few sound effects courtesy of The Patch, word-matching and so on On the first screen appear three differently-coloured buttons, each of which has a different effect and it doesn't take much for even the most novice adventurer to work out how to reveal the secret objects Almost straight away, the usual *Quill*-hunger comes into play (why? it's been done a zillion times before and it's all getting a bit b-o r-i-n-g now *please* no more hunger scenarios!)

I found it all a bit of a pain in the BXX after the first few locations, one gets the feeling that what is to come is just more of the same Although I would be the first to champion the *Quill* and the sterling work it has done in getting the efforts of non-programming adventure writers to the attention of the general public nevertheless *Quill'd* adventures can become awfully boring sometimes and one longs for the flexible approach of for example Infocom

Although *Rogue Comet* has been well reviewed in other circles I find the asking price of £4 95 just too much When there are programs like *Knight Tyme Spellbound Seabase Delta* and do on all available at just £2 or £3 it's about time that prices were re-thought and re adjusted

Walrus Computing is at 73 Landor Drive Glanymor Park Loughor Swansea SA4 2GL

From the *Quill* to *GAC* and another opera in space for the Amstrad This is from Maltdale a new London based company which will introduce their catalogue including *QOR* at the Novotel Amstrad Show Qor is the name of a planet founded by rich space pirates and 'the ruling classes' Eventually the pirates ousted the nobles one of whose exiled number Zaucu is returning to the planet bent on revenge You as Jo a special agent of the Supreme Universe Command must accompany him and turn the situation to your own advantage The background scenario is very confused with vague hints of vast empires in space in the manner of many SF authors of the 50s and 60s

Lost in space

Maltdale has unfortunately missed the opportunity to present Jo like Level 9's Kim as an androgyne – he's very firmly referred to as male

The storyline proceeds quite well starting on board the space vessel you have a limited number of moves before it lands and you must then explore the landscape of Qor The graphics are very well drawn hi-tech when on the ship, pastoral on Qor and eerie when that is required But the graphics and story are all that I find interesting in this adventure *GAC*, even more than *The Quill*, has to be very carefully programmed, and author Steve Baker has left many errors untrapped Screen layout is very haphazard and essential commands such as Help and Examine are not recognised A very idiosyncratic terminology is used throughout – what to make of this gem of a location description for example along the main cabin corridor to these o and a dead end These what? and the o is used along with abbreviations like mo and tho as well as newly-invented words like zoo-zoom and awfully feeble in-jokes (' Why is this called the Galley, there aren't any Gals here being one of the more outrageous attempts) to batter the player into bewilderment

An awful lot of work needs to be done on this one before I could recommend you to invest in it. I don't have a price for *Qor* though I'm sure that it will be too much whatever it is

May I ask software companies to please play test your programs *thoroughly* (not just ask the kids next door to have a look) before asking the public to part with their hard-earned cash?

Maltdale Services is at 88 Benerly Rd London SW11 6DU

POPULAR
Computing
WEEKLY



1986
June 19-25

PRINTERS and HARD COPY

INSIDE

The printer is one of the most important peripherals you can buy for your micro. It's the only way to produce permanent copies of data which don't rely on the micro itself when you need to re examine them

Rather than just giving you a list of suggested purchases – though you will find a popular printer guide on page VIII – we've tried to use this supplement to give you ideas on how you can make more use of your printer and what you can expect to see in the years to come.

Our recent reader survey showed that 70% of you thought a printer was the first peripheral to buy

Laser printing, desktop publishing, interfacing, budget printers, and money-saving ideas are all covered this week. We hope that you'll get some ideas, and start to use your printer more as a creative tool rather than just a listing machine! ◄

One mag per desk

PETER WORLOCK EXAMINES THE DESKTOP PUBLISHING CONCEPT. PUTTING YOUR PRINTER TO WORK PRODUCING YOUR OWN "MAGAZINES"

Desktop publishing is the buzz phrase of the year in computing circles. And it's odd that such a booming subject should owe its success to Apple's Macintosh – hardly the world's most popular computer

The idea of using a personal computer to create magazines, brochures, reports, posters and so on did not start with the Mac. Software programs that allowed you to mix graphics and different sizes of text have been around for years. The Macintosh made the breakthrough by being the first micro to offer different text sizes and styles, together with high-resolution graphics, as standard features of the machine. In other words, it was a natural for desktop publishing.

But it required another breakthrough of sorts to allow the boom to start. It came in the form of Apple's Laserwriter, arguably the best computer printer available. What makes the Laserwriter so great (apart from the £5000 price tag) is the fact that it is a powerful computer in its own right, with a 68000 processor, 500k of Rom and 1.5 megabytes of Ram, and it can produce up to eight pages a minute with a resolution of 300 dots per inch. In comparison most dot-matrix printers produce a resolution of less than 100 dots per inch

This means that the Macintosh with the

Laserwriter can produce pages that look very much like those in commercially produced magazines. But even without the Laserwriter, the Mac remains the best desktop publisher around. There are currently three programs available – **Macpublisher**, the cheapest at under £100; **ReadySetGo**, at about £120; and **Pagemaker** for about £400. As you go up the price range the programs become easier/faster/more flexible.

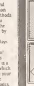
The examples shown here were created with ReadySetGo and printed on the Apple Imagewriter, a dot-matrix printer. A sample Laserwriter page is included for comparison.

Although you don't need to buy a Laserwriter (you can send your discs to a printer who will output your work on to a Laserwriter – much cheaper), the Macintosh desktop publishing system is beyond the means of most readers. However, the Mac's features will gradually become available on other computers – the Atari ST is a good bet. When that happens we can all become publishing tycoons.

In the meantime, publishing packages for the more familiar home computers continue to appear. The best-known so far are **Fleet Street Editor** from Mirrosoft, and **Pagemaker** from AMS, designed for use with the AMX mouse.

Both packages are available at the moment only for the BBC B, but both will be available for the Amstrad from July, and Fleet Street for the Atari 520 ST from August, and PCW 8256 from October.

Fleet Street Editor is described as "the first of a new generation of one-step publishing packages". Divided into six different sections – studio, graphics library, copydesk, page make-up, preview and administration – Fleet Street Editor is designed to reflect the method by which real papers are put together.



The ring-bound manual is divided into sections covering the different departments, and includes a section on printing methods which gives you some ideas of the problems faced by journalists and printer in the days before computerisation'.

The Graphics Library section is a file of images which can be used on your page. There are around 400 images, including illustrations, symbols and cartoons, and a selection of "fancy" alphabets which can be used to create "banner" headlines. Sports, computers, music, maps, heraldry, caricatures, animals, astrological signs and Christmas images are just a few of the subjects covered, and there are further library disks planned.

Panels

Panels from the graphics library are loaded into the Studio section of the program, where they can be edited to your taste. Alternatively, you can create your own graphics from scratch, using several Pen, Ink, Brush, Copy, Reflect, Reverse, Enlarge, Reduce, Fill, Rubber banding and Align functions. It's very similar to conventional art packages, but without the colour functions.

After creating your images with graphics and large text, you go to the Copydesk to enter your "body copy". The Copydesk is a simple wordprocessor which can use View or Wordwise files. There are four single-height and six double-height fonts available. After defining your text area you can enter text using a variety of



justification and word-wrapping options.

Page Make-up is the next section, where you pull all the text and graphics panels you have created into one display area, and space them out as you want them to appear on the page. In the Preview and Print department, you can examine the finished page and send it to the printer.

The final department, Administration, is not, as you may suspect from the title an excuse to put your feet up and have a cup of tea, but the area in which disk formatting, graphics mode transfer, printer drivers and other utilities are dealt with.

Don't forget, though, that with Fleet Street Editor, and other publishing packages, the story doesn't really end when you have produced your finished document. For a start, it takes around ten minutes to produce a page of finished print at the highest possible resolution, so the idea of running off several hundred copies is a bit daunting. Better by far to use a photocopier. Various useful tips on photocopying, as well as lithography, stencil and binding are included in the Fleet Street Editor manual.

Concept

Fleet Street Editor is the first of what will be several desk top publishing packages for home micros. This article has been intended to give you some idea what the concept is about, rather than to review particular programs in depth. The best way to learn about desktop publishing is to try it for yourself – like the computer printer itself, you have to experience what it can do for you before all the applications become obvious.



Laser technology could make home printers fast, powerful and silent if it weren't for the price Chris Jenkins looks to the future

Look out for the laser

While dot-matrix and thermal printers have become so cheap that few computer users are unable to afford them, business users can enjoy the benefits of much more powerful and sophisticated machines. These include daisywheel printers which offer very high quality and interchangeable type-faces, and at the top end of the market, the laser printer But is it possible that the price of laser technology will come down to home user levels?

Apple

Laser printer technology is perhaps most familiar through machines such as the Apple LaserWriter, which, in combination with the MacIntosh, forms a complete "desktop publishing" system Indeed Apple would claim to have invented the whole desktop publishing concept.

However, the Mac/LaserWrite system still costs around £7 000 so the facilities it offers are not really available to the amateur Paul Smith MD of Electronic Printing Systems, thinks that this might change soon

EPS is in the forefront of laser printer technology and Paul Smith is well aware of the possibilities of the "budget" market. At the moment EPS sells hardware and software to a market composed of about 25% mainframe users, and 75% PC users. A typical product is the EPS 1000, which at £4 995 is within the price-bracket of most medium-sized companies with heavy photocopy/printing requirements.

Yes, that read PHOTOCOPY – because the laser printer is based on photocopier technology and the EPS 1000 will function as a photocopier as well as a printer The EPS 1000 is a highly-volume desktop machine In the laser printer market this means a 10 page per minute device, about the same size (and physically similar to) a photocopier at 27 × 21 × 10 inches.

The EPS 1000 offers RS-232 and Centronics interfaces, and so can used with most popular PC s including IBM, Wang, DEC, TI, HP and so on It features landscape or portrait printing, margin set, tab alternative fonts, shadowprint, underline justification, variable line spacing, subscript and superscript, line drawing, and a resolution of 300 dots per inch horizontal and vertical.

Silence

Until you have seen the output of a laser printer you cannot really imagine how much better it can be than the product of even the best daisywheel. The added advantage of laser of course, is that it can mix fonts, combine text and graphics, print up to around 48 point size text, and, not least operate in almost total silence!

At the moment EPS's Paul Smith can only see one major obstacle to this sort of technology coming within the home-user price range "The laser printer is based on much the same technology as the photocopier and photocopiers have not dropped below £600 £700 because of the basic cost of the engine The price of this is stuck at around $900, and until there's an OEM (Original Equipment Manufacturer) who can offer the engine (the actual laser device to which the manufacturer adds the RAM ROM and operating system) at a lower price, laser printers will be high-priced"

This situation is, hopefully, going to change when the demand for better quality printers makes high-volume sales of laser printers economical

Volume

Paul Smith predicts that within two to three years we may see laser printers at around £1 200-£1 300 which will produce 4 pages per minute, and will beat the quality of the present-day inkjet devices such as the sub-£1,000 Hewlett Packard Thinkjet, which can offer colour facilities, but cannot compete on speed or resolution with the laser

Perhaps we will see some high-volume sales outlets – such as perhaps Amstrad – adopting the concept of laser printing within the next couple of years If so, it may not be long before the current crop of noisy, inky, tardy printers are replaced by silent, speedy, powerful printers at affordable prices ◀

Pick yourself a printer

The Popular Computing Printer Guide is intended to help you choose the right printer for your needs. We've set a limit of £500 but bear in mind that you may need to spend extra to get an appropriate interface for your micro

PRINTER	Price	Speed	Paper width	Matrix size	Feed	Descenders	NLQ	Interface	Graphics	Supplier	Comments
Citizen 2-colour	49.95	65	2½	6×7	F	N	N	S	Y	2	Reviewed this issue
Alphacom	75	100	8½	6×7	F	N	N	C/R/S	Y	5	Thermal printer
Samleco DT-80	115	30	8½	11×9	F	Y	N	C/R	Y	13	Very cheap dot matrix
Brother HR-5	160	30	8	9×9	F	Y	N	C/R		15	HR5-C Commodore version
Smith/Corona 80	195	80	11	8×9	F/T	Y	N	C/R	Y	13	Tractor feed extra
Centronics GLP2	199	100	8½	9×9	F/T	Y	Y	CR	Y	3	Tractor feed extra
Seikosha 100	228	30	10	5×7	P/F	N	N	C	N	17	Similar to CBM 801
Shinwa CP-80	228	100	10	9×13	TF	Y	N	CR	Y	6	QL version available
OKI Microline 80	229	80	9½	7×9	PF	N	N	CR	N	16	Tractor feed extra
Shinwa CP80	229	80	10	13×9	T,F	Y	N	CR	Y	6	RS-232 extra
CBM MPS-801	230	50	10	6×7	T	N	N	S	Y	4	Descender ROM available
Smith/Corona TP1	235	17	15½	–	F	–	–	C	–	13	Daisywheel
Smith/C D100	253	120	11	9×9	T,F	Y	N	CR	Y	13	RS-232 extra
Samlec DX85	256	120	10	9×9	T,F	Y	N	CR	Y	13	RS-232 optional
Seikosha 250X	270	50	10	5×7	PF	Y	N	C	Y	17	No tractor option
Star NL 10	278	120	10	9×9	TF	N	Y	CRS	Y	14	Plug-in interface cartridges
Riteman A1	286	120	10	9×9	PF	Y	N	C	Y	6	RS-232 extra
Riteman C+	287	105	10	9×9	PF	Y	Y	CR	Y	6	RS-232 extra
Epson LX 80	293	80	10	9×9	PF	Y	Y	CR	Y	11	Badged as CBM MPS 1000
Mannesman/T 80	299	80	10	9×7	T,F	Y	N	C	N	11	No RS-232 option
Riteman Plus	299	120	10	9×9	PF	Y	Y	C	Y	7	Tractor feed extra
Epson RX-80	320	100	10	9×9	T	Y	N	C	Y	11	RS-232 extra
Daisy Step 2000	332	16	13	–	F	–	–	C	–	6	Daisywheel
Samleco DX-080	343	120	10	9×9	PF	Y	N	CR	Y	13	RS-232 extra
Canon PW1080	366	160	10	11×9	TF	Y	N	CR	Y	13	RS-232 optional
Epson RX80F/T	366	100	10	9×9	TF	Y	N	CR	Y	11	RX80 + friction feed
Dyneer DW16	378	16	10	–	TF	–	–	C/R	–	16	Daisywheel
Silver/Reed	378	12	10	–	TF	–	–	CR	–	12	Daisywheel
Taxan KP810	389	140	10	9×9	TF	Y	N	CR	Y		RS-232 extra
Centronics H80	392	160	10	11×9	TF	Y	Y	CR	Y	3	RS-232 extra
OKI Microline 82	402	120	9.5	9×9	FP	Y	N	CR	Y	16	Tractor extra
Smith/C D200	402	160	11	9×9	TF	Y	Y	CR	Y	13	
Samleco DX135	429	120	15	9×9	TF	Y	N	CR	Y	13	RS-232 optional
Brother HR15	445	13	12	–	TF	–	–	C/R	–	15	Daisywheel
Star SG-15	447	120	15	9×11	TF	Y	Y	CR	Y	14	RS-232 extra
ACT Writer 10	454	120	10	9×7	TF	Y	N	C	Y	1	Cheapest ACT printer
Juki 6100	459	17	13	–	F	–	–	CR	–	6	RS-232 optional
Riteman 2	477	160	10	9×9	P,F	Y	Y	CR	Y	7	RS-232 extra
Seikosha 700A	488	50	8½	5×8	P,F	N	N	CR	Y	17	No tractor option
C. Itoh 8510	494	120	10	9×7	TF	Y	N	CR	N	10	RS-232 extra
Epson FX-80	503	160	10	9×9	T	Y	N	CR	Y	11	RS-232 extra

1 **ACT** Shenstone House Dudley Road Halesowen West Mids 021-501 2284
2 **Citizen** Citizen House, 97 Uxbridge Road London W5 01-579 2042
3 **Centronics**, Petersham House Harrington Road London SW7 01-581 1011
4 **Commodore**, 1 Hunter's Road Weldon North Ind Est Corby Northants 0536 205555
5 **Dean Electronics**, Glendale Park, Fernbank Road, Ascot, Berkshire 0344 885661
6 **Keyala** Enterprise House 42-44 Terrace Road Walton-on-Thames Surrey 0932 242777
7 **Kode**, Station Road, Calne Wilts. 0249 813771
8 **Mills Assocs**, Unit 6 Wilford Ind Est, Ruddington Lane Wilford, Notts. 0602 818222
9 **Micro Peripherals** 69 The Street Basingstoke Hants 0256 3232
10 **Newbury Data Recording** Hawthorn Road, Staines Middlesex 0784 61500
11 **Peripheral Hardware** Unit 13 Monkspath Business Place Shirley West Mids 021-745 3033
12 **Star** Unit 6 Worton Grange Ind Est Reading Berks. 0734 752273
13 **Samleco Computer Services** Dedworth Road Windsor Berks. 0753 854717
14 **Star Micronics** Craven House 40 Uxbridge Road, Ealing London 01-840 1800
15 **Thame Systems**, Thame Park Ind Est Thame, Oxon 084 421471
16 **X Data**, 750 751 Deal Avenue Trading Estate Slough Berks 0753 72331
17 **Seikosha**, DRG Business Systems Lynx Cres, Winterstoke Road, Weston-super-Mare 0934 419914

KEY:
► In the FEED column, **T** = tractor feed, **P** = pinfeed and **F** = friction feed. In some cases tractor feed is an optional extra for which you will have to pay more
► **C** = Centronics, **R** = RS232, **S** = Serial interfacing.
► **NLQ** = Near Letter Quality
► Nine see the Dealer Guide for suppliers.
Prices are RRP – shop around for bargains!

Printer plotting

NEW IDEAS FOR MAKING THE MOST OF YOUR COMPUTER PRINTING SYSTEM

If your greatest worry is that the cost of continually replacing printer ribbons is bringing your company to its knees, there's a solution which – though it sounds expensive – should be a worthwhile investment.

The Inker from Applied Technology can save businesses a packet simply by re-inking old fabric ribbons. The idea is based on the fact that fabric ribbons run out of ink long before they are too worn to use – but hammering an ink-starved ribbon is the quickest way to wear it out.

Applied Technology is the UK distributor of the American Inker and the company's own offices use the product to save a fortune on ribbons. The Inker consists of an ink reservoir and a drive shaft, with a mounting adaptor which can be chosen to cope with all kinds of ribbons, Epson Olivetti, Hewlett/Packard, DEC and so on.

The savings which can be made in offices which might have anything up to twenty printers are astounding – one Health Service branch apparently managed to save £11 000 per year by using The Inker.

An added advantage is that Applied Technology can supply blank ribbons, and coloured inks in five varieties, so that you can customise your printer output to suit your needs.

Only really heavy printer users are likely to find The Inker profitable since it costs £195 + VAT. But for businesses which spend a fortune on replacing ribbons which could well serve for years The Inker represents a clever money saving method ◄

Applied Technology, FREEPOST MI 135, Stockton-on-Tees, Cleveland, 0642 672268.

If you need new ideas on how to use your printer, and a useful reference guide to control codes and word processing, you might like to look out for *Getting the most from your Printer* by J W Penfold.

Published by Babani, this 84 page bookette costs £2.95 and is aimed at owners of all the popular home computers and printers. Sections include an explanation of ASCII control codes sending codes to the printer, dealing with features such as bold and emphasised printing, line feeding, density modes and so on.

The section on word processors covers some popular packages such as Quill and Visawrite ◄

Berhard Babani Publishing, The Grampians, Shepherds Bush Road, London W6 7NF, 01-603 2581.

Turn your printer to a whole new application with the **Underware Transfer Ribbon** from Banbury Business Computers. If you are fed up with listings, bored with word processing and tired of art packages, how about making T-shirts?

The Underware Transfer Ribbon, developed by the American Diversions Corp allows design to be printed out on normal printer paper, then ironed down on to a T-shirt. At the moment the Epson version only is available but Banbury are hoping to make Canon Kaga and other makes available.

Any screen image using hi-res, low-res or text, can be prepared on your machine then flipped over to produce a mirror image for printing (if you have appropriate art software) The design is then ironed onto the shirt – polyester works best, while 100% cotton shirts tend to provide a less washable image.

The black only ribbon costs £12 while for £19 you can get a set of coloured pens using the same special ink, to hand-colour your screen dumped design.

For quick, cheap, "disposable" T-shirt designs for events such as shows sports days, open days, or whatever the Underware Transfer system seems to be another ingenious application for the humble home computer and printer ◄

Banbury Business Computers, 3 Schofields Way, Bloxham, Banbury, Oxon, 0295 720812.

Users of the Amstrad PCW machines, who require more facilities than those provided by the printer supplied with the system will be interested in two bundling deals offered by Wilding's.



The Amstrad PCW 8256 is being offered with either a Brother HR10, or a Silver Reed EXPD 500 daisywheel printer. The printers cost £199.95 while the cables and driving software which includes New Star's New Word processor and a spelling checker costs £149.95. Both the printers are standard Centronics devices, and the prices include VAT ◄

Wildings Office Equipment, 303 High Holborn, London WC1, 01-405 8104.

If space is at a premium in your home computer set up one thing you can do without is the problem of where to put a stack of printer paper.

Now PW Engineering has come up with a paper management system which solves most of the problems in one go.

The hardware is produced in sturdy sheet steel finished in beige acrylic – particularly suited to the BBC computer for which the system was first designed. It consists of a



base plate on which the printer sits at an angle designed to allow the user to examine the print-out as it appears a set of legs and a removable rear paper tray.

There's a combined cable protector and paper shield to prevent paper becoming entangled with your mains and computer cables, and the system is available in two sizes; for 80 column dot matrix printers at £34.75 plus VAT, or for larger daisywheel printers at £43.44 plus VAT ◄

PW Engineering, Churchill Road, Bicester, Oxon, 0869 253226.



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Epson LQ1000 NLQ £765.95
Epson JX80 Colour £515.95
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Star NL10 (IBM) NLQ incl I/F £279.95
Star SG10C NLQ (CBM I/F) £229.95
Star SG15 NLQ £379.95
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Star SD15 NLQ £465.95
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Two colours better?

COMMODORE MICRO OWNERS CAN'T AFFORD TO IGNORE THE £50 CITIZEN TWO-COLOUR PRINTER, SAYS CHRIS JENKINS



The sheer bulk of most dot-matrix printers, along with the not inconsiderable cost, is enough to dissuade many potential purchasers from making the investment. If your home set-up is limited to a small area, the problems of fitting in a printer with all its attendant wiring and paper stacks, can be just too much hassle

Commodore computer owners now have the perfect solution, in the form of the excellent Citizen 2-Colour Commodore Printer

Priced at an incredibly low £49.95, the Citizen is deceptively small and unobtrusive. At first sight, the natural assumption would be that it was some form of plotter similar to the Commodore 1520 or maybe a thermal paper printer But nothing could be further from the truth it's a full function dot-matrix device which, although it can only print on 2¼" 'till roll' paper, is incredibly efficient and useful.

Serial

Measuring only 240 × 176 × 81 mm, and weighing in at 2Kg, the Citizen is so small that it will fit on the most cluttered desk (and I should know!) It's mains powered – none of the worries over power failure associated with battery devices – and comes with a built in Commodore serial interface for complete compatibility with the Vic 20, CBM 64, SX-64 C128, Plus/4 and C16

Controls are kept to a minimum. On the back are the ON/OFF switch and the serial port (just the one) On the front, three LED's, red for ALARM, in case of paper jamming or data error, and green for ON LINE/OFF LINE and POWER, and three buttons, LINE FEED, SELECT (online) and DESELECT (offline) That's all there is to it. The paper "till roll" mounts on two arms which clip to the back of the printer, and feeds through under the cover and across the print head There's a tensioning arm to keep the paper taut.

Addresses

In operation the Citizen is like most other Commodore-compatible printers, except for the two-colour capability The manual, which is surprisingly full and clear considering the low-end market at which this device is presumably aimed, explains all the business of device numbers, addresses secondary addresses and control codes needed to operate any Commodore printer

Several useful extras can be accessed by using simple CHR$ messeges. The line spacing, normally set to 5.5 mm can be altered using a secondary address of 6, and you can select either the upper/lower case or upper case/graphics mode using SA 7 Most usefully the width of the characters printer can be doubled using CHR$(1), changing the matrix size used from the normal 7 × 6 to 7 × 12. There's also an INVERSE printing function.

Printing in red is achieved using CHR$(20). You can't mix red and black on one line. The red/black ribbon used is a standard size which shouldn't be difficult to obtain when you need a replacement.

Bit image programming allows you to define your own graphics characters using simple Basic commands, and there are also commands for paging, carriage return and line feed The print produced is remarkably clear, although obviously limited to 40 column width This can be an advantage if you are printing out program listings, since the printout appears in exactly the same format as the listing on the screen.

With a print speed of 65 characters per second (48 lines per minute in 40-column mode) the citizen is by no means slow While it might lack the refinements of some printers – multiple serial ports, fancy paper feeds, compatibility with a wide rage of non-Commodore machines, and the like – the Citizen is absolutely ideal for producing listings programming notes, financial figures, and so on. It wouldn't do for word processing because of the paper size but just for the hell of it, I tried it with Paperclip software and got faultless results.

```
CITIZEN
TWO COLOUR
DOT MATRIX PRINTER
hello
HELLO BIGGER
HELLO IN RED

10 OPEN4,4
15 PRINT#4,CHR$(1)"    CITIZEN"
16 PRINT#4,CHR$(20)CHR$(1)"   TWO COLOU
R"
17 PRINT#4,CHR$(1)" DOT MATRIX PRINTER"
18 PRINT#4,"HE"
20 PRINT#4,CHR$(129)"HELLO"
30 PRINT#4,CHR$(1)"HELLO BIGGER"
40 PRINT#4,CHR$(20)"HELLO IN RED"
50 PRINT#4,CHR$(18)"HELLO REVERSED"
60 OPEN1,4
70 CMD1
80 LIST
```

At this price, any Commodore micro owner without a printer could hardly afford to ignore the Citizen In fact, even if you already own a printer wouldn't you like to go one better than the Joneses and own two? The Citizen Two-Colour Printer makes it a distinctly interesting proposition ◄

Product: Citizen Two-Colour Printer
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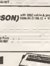
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Wordease Plus Rom – Computer Concepts	39.08	44.50

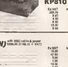
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Logical and systematical

Ken Garroch takes a look at the learning possibilities of Logo

LOGO was designed by Seymore Papert and his colleagues at the Massachusetts Institute of Technology as a computer language aimed mainly at school children to help them to learn to think logically and systematically

Its main feature is Turtle Graphics, used as the graphic output The turtle is usually a small triangle which is moved around the screen although most Logos also have facilities to use a real 'live' turtle on a piece of paper on the classroom floor The commands available, to start with, are very simple and fairly few For example, to move the turtle in a square the following sequence would be executed

```
FD 10
RT 90
FD 10
RT 90
FD 10
RT 90
FD 10
RT 90
FD 10
RT 90
```

(FD = ForwarD RT = Right Turn)

This may seem a little tedious Fortunately, there is structure built into the language in the forms of *TO* and *REPEAT* So a shorter version of square would be

```
TO square
REPEAT 4[FD 10 RT 90]
END
```

The *TO* structure is used to define words in a verb type manner Once defined, square can simply by typed in to make the turtle draw a square *REPEAT* is pretty obvious it says repeat the next sequence a specified number of times To give square different sizes a variable could be introduced

```
MAKE side 10
TO square
REPEAT 4 [FD side RT 90]
END
```

The language of turtle graphics generally follows this simple style allowing words to be made up of other words eg

```
TOpatt
REPEAT 60[square RT 6]
END
```

which will produce a pretty pattern The idea is to enable children to develop some idea of geometry by experimentation For instance once a square has been defined a hexagon is simple just change the angle from 90 to 60 degrees and up the number of repetitions to six From here a circle is but one step along with the ideas of infinity and approximations

All of this may sound easy, or complicated depending on your point of view However the main idea is to use the language and develop at your own speed Once the ideas of structure have been taken in Logo allows the manipulation of words, numbers and symbols as in most other languages but, in a different way

In the early days of artificial intelligence one language that came to the fore was Lisp (Literally thousands of parentheses) This allowed the manipulation of information as a series of lists

(ABCD)

is a list of letters with A at the head and BCD as the tail In turn A may have a list attached to it known as a property list

Logo and Lisp

Seymore Papert was working at MIT in the artificial intelligence laboratory where Lisp has its roots and so it is not surprising that Logo and Lisp have quite a few similarities In fact early versions of Logo were written in Lisp and apart from the turtle graphics Logo is very similar in style and structure

All information is treated as a list whether it be numbers or words so

[This is a list]

is a list of words and

[12 32 46]

is a list of numbers To extract items from a list the commands *ITEM* and *FIRST* can be used, so

FIRST [This is a list]

returns This

ITEM 3 [This is a list]

returns a

The actual commands very from version to version In the main those used here are general and may need alteration to work with one of the common versions such as Dr Logo from Digital Research (as bundled with some of the Amstrad machines)

Being able to manipulate data in list format brings us back to the main idea of Logo which is to teach structure Everything in the world can be defined as belonging to a set or list Many things come in pairs (shoes arms legs etc) others such as apples pears can be grouped in different ways A pound of apples may contain four but apples can also be said to be part of the set of fruit.

Simple Turtle Graphics

In Logo, these concepts can easily be represented as the lists

MAKE apples [apple1 apple2 apple3 apple4]

MAKE fruit [apples oranges pears grapes]

MAKE diet [fruit water veg]

The structure of the diet can hence be broken down

Logo has data structuring implicitly built in unlike most other computer languages where allowing one object to relate to another is a matter of defining special structures to hold the information In Basic it is almost impossible to do this in a way that is easy to understand In everyday objects however laying everything out in sets with their relations implied in their titles is as natural as breathing The other main feature of Logo is how programs are written

Minor parts

Taking the idea of lists and expanding the idea of defining words to do things as well as mean them (Verbs and Nouns) pro-

Advanced Turtle Graphics

grams are written as a collection of small sections that perform minor parts of the whole This idea of splitting up a program into smaller, more manageable parts is applicable to all programming and all problems and perhaps a desirable way of thinking

All these technicalities may lead you to think that as a teaching language (or environment) nothing definite is learned when using Logo For instance there is no learning by rote no geography history etc All of which is true except when you take into account the circumstances under which Logo can be taught Logo programs need some information to work with and after all most subjects are mainly about details and procedures all of which can be included in Logo programs

Concept learning

Now that the Amstrad 664 and 6128 have become widely available more people will be coming into contact with Logo It has been available on machines like the Apple II, BBC, and RML, for quite a while but unfortunately it has not caught on This may be due to the misunderstanding that computers are really only suitable for children (and adults) over the age of 12

Logo is not a computer language for the training of future programmers (although it gives a better grounding than most other languages) It is a world waiting to be explored like an adventure game It has all the primitive words and commands available all that has to be done is work them into something learning the concepts of structure and geometry as you go It is ideally suited to younger children who are just beginning to learn the basics of reading and writing

As has been said, the are number a versions available there most common being Dr Logo This will run on most CP/M systems that provide graphics output Unfortunately it is very slow a fault with nearly every implementation I ve seen The turtle graphics take a while to generate when compared to other computer graphics systems such as those provided from most Basics

There is not very much standardisation between the various versions different words are used for different things, leading to confusion However the basic turtle graphics instructions are usually the same It is the extensions that are non standard Unfortunately the same cannot be said for the list processing commands and when going from one version to another a lot of time is spent rooting around in the manual to find out exactly the word needed to do a particular job

Logo is a much misunderstood language which accounts perhaps for its lack of popularity It is not so much a programming tool as are other languages it is a learning tool

Logo Buyers Guide

Program *Turtle Graphics* **Micro** BBC/Electron **Price** £16 80 **Supplier** Acornsoft, Fullbourne Rd, Cherry Hinton, Cambridgeshire Tel 0223 245200

Program *Logo* **Micro** Commodore 64 **Price** £34 95 **Supplier** Commodore UK, 1 Hunters Rd, Weldon Trading Estate, Corby, Northamptonshire Tel 0536 205555

Program *Logo Graphics Interpreter* **Micro** Commodore 64 **Price** £7 95 **Supplier** Kuma, 12 Horseshore Park, Pangbourne, Berks Tel 07357 4335

Program *Snail Logo* **Micro** Spectrum **Price** £9 95 **Supplier** CP Software, 15 Dispatch Rd, London N19 Tel 01-272 2918

Program *Logo* **Micro** Spectrum **Price** £39 95 **Supplier** Sinclair Research, Milton Hall, Cambridge Tel 0233 86266



SCROLLER

by Chris Gibson

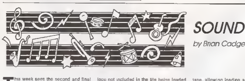
This short machine code program allows the user to input a message (up to 255 characters long) which will then be scrolled at the bottom of a *Mode 7* screen under 6502 interrupts. This means that any Basic program can be run at the same time without affecting the scrolling. Thus the program could be used as part of a title sheet to a game.

Just type in the program and type *Run*. The screen will clear and the message will begin to scroll. To stop the scrolling type *Call Disable* – typing *Call Enable* will resume the scrolling.

The way the program works is to store each individual character in the string *M$* in a reserved data bank called *Bank* (Lines 350 to 390). The computer then sets the interval timer to the value held in the memory locations called *!Speed*. This must be a negative number as the timer increments it by one every hundredth of a second.

When the timer becomes zero an interrupt occurs and the computer jumps to the routine (labelled *Rout*). The status of the computer is stored on to the stack (Line 110) and the scroll is carried out (Lines 110 to 130). The timer is reset (Lines 160 to 200) and the computer status is restored (Line 150). The computer is then allowed to carry on with its normal functions.

```
10MODE7
20OSBYTE=&FFF4:OSWRCH=&FFEE
30OSWORD=&FFF1 ?&72=0
40VECT=&220:VECTOLD=&70
50DIM SPEED 5,S% 100,BANK 256
60!SPEED=-10
70SPEED?4=&FF
80FOR PASS=0TO3 STEP3
90P%=S%
100[OPT PASS
110.ROUT :PHP:PHA:TXA:PHA:TYA:PHA
120LDX &72:LDA BANK,X:STA &7FDA:INC &7
2
130 LDX#0:.SCROLL:LDA &7F9B,X:STA &7F9
A,X:INX:CPX #35:BNE SCROLL
140JSR SET
150PLA:TAY:PLA:TAX:PLA:PLP:RTS
160.SET
170LDX#SPEED MOD &100
180LDY#SPEED DIV &100
190LDA#4:JSR OSWORD
200RTS
210.ENABLE
220LDA VECT:STA VECTOLD
230LDA VECT+1:STA VECTOLD+1
240JSR SET
250LDA#ROUT MOD &100:STA VECT
260LDA#ROUT DIV &100:STA VECT+1
270LDA#14:LDX#5:JSR OSBYTE
280RTS
290.DISABLE
300LDA#13:LDX#5:JSR OSBYTE
310LDA VECTOLD:STA VECT
320LDA VECTOLD+1:STA VECT+1
330RTS:]
340NEXT
350M$="*.......................................
......This message is now scrolling unde
r 6502 interupts and will scroll regardl
ess of any program.......................
....Try altering the value of !SPEED to
alter the speed of the scrolling...*"
360FOR L=1 TO LEN(M$):A=ASC(MID$(M$,L,
1))
370IFA<32 THEN NEXT
380L?(BANK-1)=A:NEXT
390FORI=(L-1) TO 255:I?BANK=32:NEXT
400CLS:CALL ENABLE
```

SOUND

by Brian Cadge

This week sees the second and final helping of listing for the Sound Designer program we started last week. As explained before, the utility is fully icon driven and very easy to use.

Files are loaded into the sound designer by selecting the *Load* option. Any envelope not included in the file being loaded will not be affected – therefore files can be merged into the designer from various different files if required.

Selecting the Disc icon (which will only operate if you have a disc drive connected) will produce the same menu as for tape, allowing loading and saving of files to disc. An additional option is *Directory* which will display the filenames of all *Env* files on the disc.

The penultimate icon shows a fat cross X – selecting this allows you to clear the entire current envelope settings. Select

Yes to go ahead or No to cancel the command Clearing the envelope wipes out the volume graph and resets the vibrato settings Only the current envelope is cleared all others remain unaffected

The final icon shows a left pointing arrow, this is used for deleting the last section of the current volume envelope entered on to the graph If no sections have been entered then the command is ignored

Attempting to add more than five sections on to the volume graph will produce an error message and will be ignored as will attempting to add a section that goes 'backwards' in time

A little experimentation with this program can create some quite impressive results which when combined into your own programs could have your Amstrad sounding like a small orchestra (maybe)

For those interested in the workings of the program the various subroutines and key sections of code have been fully commented The small section of machine code at the start of the program is used to produce the small arrow which moves in response to your joystick, you will find it produces a smooth and flicker free pointer The routine exits to Basic when the joystick fire button is pressed

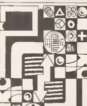
Owners of an AMX Mouse for their Amstrad may like to know that the program will work equally well with this rather than a joystick without modification – you do not need to load any other software first

Whenever a new volume envelope section is added, the program automatically works out the 'best fit' line which will produce the correct volume change over the required time It is only limited by the Amstrad s sound hardware

The usual technique is used for checking for the presence of a disc system This involves setting an *On Error* trap and calling the |*Disc* command If this command exists then no error will occur and a disc system is present If it does not exist then an 'Unknown command' error will be caught and the program will note that no disc system is present and default to tape

All sound designer files are simple Ascii files which contain Basic compatible *Env* and *Ent* commands on seperate lines starting at Line 500 in steps of ten The program checks for syntax errors when loading in a file and will abandon the load if any are noted – this will only occur if you attempt to load in files which have not been produced by the Sound Designer

[illegible]



QL TRAP

by Simon Goodwin

Sinclair SuperBasic is a powerful and flexible programming language, but it lacks some facilities including a mechanism to trap unexpected errors In this article we provide a new command to banish errors associated with file and device handling and reveal a simple programming trick that makes the *error in expression* message a thing of the past

Other Basic interpreters allow an *On Error Goto* statement or something similar, which diverts the computer to a certain line when an error occurs Late versions of the QL recognise a *When Error* command which resembles *On Error Goto*, but this has a number of snags

When Error only works on versions of the QL from JS onwards This means that you can't use it in programs which are intended to run on any QL – most British machines belong to versions AH or JM which do not allow the new commands Secondly *When Error* is an undocumented feature of the QL Sinclair didn't explain the command in the QL's documentation so you have to use it by trial and error Finally the implementation of *When Error* on the JS and MG QLs is far from bug free This combination of factors makes it little more than a curiosity

In this article we present an alternative way of checking for errors In the form of a new SuperBasic function *Status%* which will work on all versions of QL. The function lets you check the validity of file and advice names from within a program avoiding errors such as *in use, not found already exists* and *bad name.*

Statue report

Status% is a function which expects a single string parameter The string should be the name of a QL device followed by parameters (if any) or a file name

The function analyses the string to find out whether or not it starts with the name of a device on the current QL. Any parameters of the name are then checked (file names or extra information, as in *ser1EHC*) Finally the function attempts to open a channel to communicate with the device specified If successful the channel is closed and any file which has been generated en route is deleted

Status% returns an integer (whole number) which indicates the degree of success it had in performing these operations The possible values are shown in the table

The function can cope with *any* device linked into the QL's QDOS operating-system – including add-ons – so you can use it on a basic QL secure in the knowledge that it will also work with floppy discs modems parallel printers and so on

The following command indicates that the file Supercharge exists on floppy disc number 1

Print Status%("flp1_supercharge")
– 8

The program

The code for *Status%* occupies only 112 bytes It links itself into SuperBasic, so you can use the function in any Basic program once it has been loaded – you can treat it just like one of the built-in functions

The listing consists of a simple Basic loader which reserves space for the command and *Pokes* it into memory Type it in then *Run* The *Call* command in Line 210 links the new code into SuperBasic Once the message *Status% Loaded* has been printed you can delete the Basic – it is only needed to set up the code in reserved memory If you accidentally mis-type some of the data the computer will print an appropriate message Correct the error and re-run the program

Trick arithmetic

Status% is very useful but it can only trap errors associated with files and devices Programs can often be made to crash if text is entered when a number is required, and *Status%* cannot help with this problem Luckily a simple programming trick can be used to get around this If your program contains the command *Input X*, the QL will read any sequence of characters from the keyboard until *Enter* is pressed The computer then tries to evaluate the characters as if they were a number If the characters are not numeric the program stops with the report *error in expression* Luckily it is possible to get around this problem In most cases with a single extra statement. The solution is to read the characters as a string at first so that they can be checked within your program rather than by the QL system, *Input Temp$ X= 0 & Temp$* for instance

We now use the string variable *Temp$* as a temporary store for the characters The digit 0 is tacked on to the front of the string before it is copied into *X* the numeric variable If the string was numeric the extra zero at the start will have no effect on the value – for example 125 and 0125 represent the same value If the string was not numeric *X* takes the value zero since

Value returned	Meaning
0 or more	The device exists and is not busy a file with the name specified (if any) does not yet exist The parameters (if any) are valid
−3 or −6	The device name and parameters are valid but the QL has insufficient free space to open a new channel to the device
−7	There is no device with the specified name on this QL.
−8	A file with the name specified exists on the device specified
−9	*Either* the device specified exists, but it is already in use and no other task may use it until the present one has finished *or* the file specified is in the process of being written
−11	The device is full
−12	The device name is valid but the file name or parameters are not
−16	The *medium* (disc cartridge etc) cannot be accessed because it is faulty, or has been changed while files were still open

Table of values returned by the Status% function

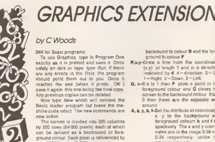
the QL stops evaluating as soon as it finds a non-numeric character. In either case there is no error.

This is a useful trick but it does not allow you to distinguish between a 'real' value zero and one that indicates an error. In most cases this won't matter but if need be, you can filter out real zero values by comparing *Temp$* with '0', immediately after the *Input*. If the strings match you can set *X* to zero immediately and jump past any code that might otherwise reject it.

There are a few other special cases to be checked for. If the user types a capital or small letter 'E' you'll still get an error because the QL expects an exponent after and E in a number: 0E is illegal where 1E6 is fine. Very big numbers – such as 1E700 – also cause problems.

Finally, the QL only allows a digit or nothing after a decimal point so you can fool it by typing in two full stops. In practice it is ready to check for these cases and you can often get by without bothering about them and still have your programs fairly well error trapped.

```
100 REMark QL STATUS% Command loader
110 REMark (C) 1986 Simon N Goodwin.
120 RESTORE 240
130 base=RESPR(112)
140 total=0
150 FOR i=base TO base+110 STEP 2
160   READ d:total=total+d:POKE_W i,d
170 END FOR i
180 IF total<>778258 THEN
190   PRINT "Error in DATA."
200 ELSE
210   CALL base
220   PRINT "STATUS% loaded."
230 END IF
240 DATA 17402,10,13433,0,272,20178,0,0,1,12
250 DATA 1875,21569,21589,21285,0,13433,0
260 DATA 278,20114,26116,21315,26372,28913
270 DATA 20085,16881,-6144,11784,11273,14352
280 DATA 21060,1924,18628,30210,29439,28673
290 DATA 20034,8774,-11324,21641,11273,14848
300 DATA 26122,28674,20034,8263,28676,20034
310 DATA 8774,21897,13189,-6144,28672,30723
320 DATA 11593,88,20085
```

GRAPHICS EXTENSION

by C Woods

Graphics is a machine code routine which allows access to high resolution graphics from Basic. Nine new commands are added to plot points, draw lines, change colours etc.

The program consists of 1140 bytes of machine code, residing at *$C000* (49152) which means it is untouchable by Basic or the Operating System. The high resolution screen sits at *$2000* (8192), mainly due to inadequacies of the VIC chip. Consequently for programs larger than 6K (*$0800 — $2000*) Basic has to be moved to *$4000* above the screen. Even so, this still allows 24K for Basic programs.

To use Graphics, type in Program One exactly as it is printed and save it. Once safely on disk or tape type *Run*. If there are any errors in the *Data* the program should point them out to you. Once it reaches the end (when it prints 'OK') save it again, this one being the final copy. Any previous copies can be deleted.

Now type *New* which will remove the Basic loader program but leave the machine code intact. The new commands are now active.

The screen is divided into 320 columns by 200 rows (64 000 pixels) each of which can be defined as a backround or foreground colour. Each pixel is referenced by an x (0-319) and y (0-199) coordinate.

The colours are now defined in blocks of 8×8 pixels, each block having a backround and foreground colour. These blocks from now on will be referred to as attributes and are specified by x (0-39), and y (0-24) coordinates.

The commands are all prefixed by *Sys 49152* eg *Sys 49152 P 100 50* plots a point at 100 50. The nine commands are as follows –

G–Enter Graphics mode

T–Return to Text mode

C, b, f–Clear the graphics screen to either foreground or backround (as set by the last **D** command) and set the backround to colour **B** and the foreground to colour **F**

P,x,y–Draw a line from the coordinates (x,y) of length 1 and in a direction indicated by **d**. d = direction 0 = Up 1 = Right 2 = Down, 3 = Left.

D, c–If **c** is 1 then **P** plots a point in the foreground colour and **C** clears the screen to the backround colour. If **c** is 0 then these are the opposite way around.

A, x, y, b, f–Set the Attribute at coordinates x y to the background and foreground colours **b** and **f** respectively. The x and y coordinates are in the range 0-39 and 0-24 respectively, unlike the other commands.

M–Move Basic to *$4000* (16384). This command followed by New will move Basic above the Hires screen. This should be typed in before using programs greater than 6K (including variables). I would suggest that it is always used at the start of a session.

V–Dump all the simple variables (ie not arrays) to the text screen.

The foreground and backround colours referred to earlier have the following

codes

0 Black	8 Orange
1 White	9 Brown
2 Red	10 Light Red
3 Cyan	11 Grey 1
4 Purple	12 Grey 2
5 Green	13 Light Green
6 Blue	14 Light Blue
7 Yellow	15 Grey 3

For example *A, 10, 15 0 2* would set the attribute at (10, 15) to backround black and foreground red

Normally the colours come from locations at the top of memory but now they come from locations *$0400-$0800* (1024-2048) which is the text screen Due to this If you change any colours in hi-res and then return to the text screen, you will see garbage, to remove this just clear the screen

Program Two is an example of what can be achieved just let your imagination run wild and after a little experimentation you should get the hang of it

```
10 for a=49152 to 50202 step 10
20 cs=0
30 for b=a to a+9
40 read d
50 cs=cs+d
60 poke b,d
70 next b
80 read ch
90 if ch<>cs then print"error in line",a-48152
100 next a
110 print"ok"
1000 data 32,253,174,201,80,208,3,76,87,192,1306
1010 data 201,65,208,3,76,210,192,201,67,208,1439
1020 data 3,76,88,193,201,71,208,3,76,190,1950
1030 data 193,201,84,208,3,76,68,193,201,76,1303
1040 data 208,3,76,130,192,201,77,208,3,76,1174
1050 data 75,193,201,86,208,3,76,82,193,201,1318
1060 data 68,208,3,76,70,192,32,8,175,96,928
1070 data 32,115,0,32,253,174,32,163,193,165,1159
1080 data 20,41,1,141,204,194,96,32,115,0,844
1090 data 32,253,174,32,163,193,165,20,141,157,1370
1100 data 194,165,21,141,158,194,32,253,174,32,1404
1110 data 163,193,165,20,141,199,194,173,198,194,1640
1120 data 174,197,194,172,195,194,32,37,194,96,1489
1130 data 32,115,0,32,253,174,32,163,193,165,1159
1140 data 20,141,197,194,165,21,141,198,194,32,1303
1150 data 253,174,32,163,193,165,20,141,199,194,1534
1160 data 32,253,174,32,163,193,165,20,41,3,1076
1170 data 141,119,195,32,253,174,32,163,193,165,1467
1180 data 21,201,0,240,10,201,1,208,20,165,1073
1190 data 20,201,64,176,22,165,20,141,117,195,1121
1200 data 165,21,141,118,195,24,105,117,195,201,1208
1210 data 0,240,4,32,205,194,96,96,32,115,1014
1220 data 0,32,253,174,32,163,193,165,20,201,1233
1230 data 40,176,87,141,194,194,32,253,174,32,1323
1240 data 163,193,165,20,201,25,176,72,141,195,1351
1250 data 194,32,253,174,32,163,193,165,20,41,1267
1260 data 15,141,196,194,32,253,174,32,163,193,1393
1270 data 165,20,10,10,10,10,13,196,194,141,769
1280 data 196,194,173,195,194,10,10,24,109,195,1300
1290 data 194,10,162,0,134,252,10,38,252,10,1062
1300 data 20,252,133,251,24,105,252,105,4,133,1357
1310 data 252,172,194,194,173,196,194,145,251,96,1867
1320 data 32,72,170,96,32,115,0,32,211,193,961
1330 data 96,32,115,0,32,137,193,96,32,115,848
1340 data 0,32,120,195,96,32,115,0,32,253,875
1350 data 174,32,163,193,165,20,41,15,141,196,1140
1360 data 194,32,253,174,32,163,193,165,20,10,1236
1370 data 10,10,10,13,196,194,141,196,194,32,996
1380 data 16,194,32,225,193,96,32,115,0,32,935
1390 data 194,193,96,169,0,141,0,64,141,1,999
1400 data 64,141,2,64,169,1,133,43,169,64,850
1410 data 133,44,133,46,169,3,133,45,96,32,834
1420 data 130,173,76,247,193,32,225,193,32,194,1493
1430 data 193,162,20,169,0,160,150,32,37,194,1167
1440 data 165,197,201,4,208,250,32,211,193,96,1557
1450 data 173,17,208,9,32,141,17,208,173,24,1002
1460 data 208,9,8,141,24,208,96,173,17,208,1092
1470 data 41,223,141,17,208,169,21,141,24,208,1193
1480 data 96,169,0,133,251,162,0,160,0,130,1109
1490 data 24,165,32,133,252,173,204,194,201,0,1318
1500 data 240,5,169,0,76,253,193,169,255,224,1594
1510 data 31,208,4,192,64,176,2,145,251,200,1273
1520 data 208,243,232,224,32,208,218,96,162,250,1873
1530 data 173,196,194,157,255,3,157,249,4,157,1545
1540 data 243,5,157,237,6,202,208,241,96,142,1537
1550 data 197,194,41,1,141,198,194,140,199,194,1499
1560 data 201,1,208,5,224,64,144,1,96,192,1136
1570 data 208,176,251,72,152,74,74,74,141,200,1414
1580 data 194,138,78,196,194,106,74,74,141,201,1398
1590 data 194,152,41,7,141,202,194,138,41,7,1117
1600 data 170,189,128,224,0,240,5,202,74,76,1288
1610 data 91,194,141,203,194,169,0,133,251,173,1549
1620 data 200,194,133,252,74,102,251,74,102,251,1633
1630 data 24,101,252,133,252,169,0,133,203,173,1480
1640 data 201,194,10,10,10,30,253,24,101,251,1092
1650 data 133,251,165,203,101,252,133,252,169,201,1956
1660 data 24,109,202,196,133,251,109,252,105,32,1467
1670 data 133,252,160,0,173,204,194,201,0,240,1557
1680 data 0,177,251,13,203,194,70,104,194,173,1473
1690 data 203,194,73,255,49,251,145,251,174,197,1792
1700 data 194,172,199,194,194,96,0,0,0,0,959
1710 data 0,0,0,0,0,0,0,173,119,195,487
1720 data 201,0,240,32,201,1,240,47,201,2,1165
1730 data 240,5,201,3,240,59,96,174,197,194,1409
1740 data 173,198,194,172,195,194,32,37,194,200,1593
1750 data 206,117,195,208,247,96,174,197,194,173,1807
1760 data 198,194,172,199,194,32,37,194,136,206,1562
1770 data 117,195,208,247,96,32,101,195,32,83,1306
1780 data 195,32,47,195,173,117,195,208,242,173,1577
1790 data 118,195,208,237,96,32,101,195,32,83,1297
1800 data 195,32,65,195,173,117,195,208,242,173,1595
1810 data 118,195,208,237,96,173,197,194,24,105,1547
1820 data 1,141,197,194,173,198,194,105,0,141,1344
1830 data 198,194,96,173,197,194,56,233,1,141,1483
1840 data 197,194,173,198,194,233,0,141,198,194,1722
1850 data 96,173,117,195,56,233,1,141,117,195,1324
1860 data 173,118,195,233,0,141,118,195,96,174,1443
1870 data 197,194,173,198,194,172,199,194,32,37,1590
1880 data 194,141,198,194,96,0,0,0,165,157,1145
1890 data 201,128,240,1,96,165,45,133,107,165,1381
1900 data 46,133,108,165,108,197,48,208,7,158,1345
1910 data 187,197,47,208,1,96,160,0,177,107,1260
1920 data 201,128,176,89,32,210,255,200,177,187,1655
1930 data 201,127,176,23,32,210,255,32,88,196,1344
1940 data 165,187,164,188,32,162,187,32,221,189,1527
1950 data 32,30,171,169,255,255,121,41,127,32,1186
1960 data 210,255,169,36,32,210,255,32,88,196,1483
1970 data 169,34,32,210,255,160,0,177,187,170,1394
1980 data 240,21,200,177,187,133,94,200,177,187,1556
1990 data 133,35,160,0,177,94,32,210,255,200,1236
2000 data 202,208,247,169,34,32,210,255,76,94,1487
2010 data 156,176,146,41,127,32,210,255,200,177,1520
2020 data 187,201,127,176,10,32,210,255,32,88,1376
2030 data 196,169,70,32,210,255,169,78,32,210,1421
2040 data 255,208,35,41,127,32,210,255,169,37,1369
2050 data 32,210,255,32,88,196,160,0,177,187,1337
2060 data 133,98,200,177,187,133,99,162,144,32,1363
2070 data 68,188,32,221,189,32,30,171,169,13,1113
2080 data 32,210,255,24,165,187,105,5,133,187,1303
2090 data 144,2,230,188,32,220,255,32,225,255,1591
2100 data 208,1,96,165,203,201,64,208,241,56,1443
2110 data 176,159,96,32,240,255,160,3,24,32,1133
2120 data 240,255,169,61,32,210,255,24,165,187,1590
2130 data 185,2,133,187,144,2,230,188,96,234,1321
```

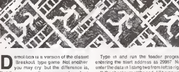
Program 2

```
10 gr=49152
20 sysgr,d,1:sysgr,s:sysgr,c,0,1
30 for x=0 to 319
40 l=rnd(1)*100
50 sysgr,l,x,100-l/2,2,1
60 next x
70 for x=0 to 319
80 y=sin(x/25.39)*100+100
90 sysgr,p,x,y
100 next x
110 for x=0 to 39
120 sysgr,a,x,12,rnd(1)*16,rnd(1)*16
130 next x
140 get g$ if g$="" then 110
150 print"♥",:sysgr,t
```



DEMOLITION

by A Severn



Demolition is a version of the classic Breakout type game Not another you may cry but the difference is, that this one is written in compact machine code with smooth fast graphics – unlike the original version on the Horizons tape!

Type in and run the loader program, entering the start address as 29997 Now enter the data in listing two from left to right, with the checksum at the end All being well you should be able to enter the next line

If an error is indicated enter the address of the line to be retyped When you have finished, the code will automatically be saved

For both the gamesplaying novice and the machine code afficionado this one's a little cracker!

```
10 INPUT "Start address ";n
20 LET c=0: FOR x=n TO n+7
30 INPUT (n);" ";(x-n+1);" )";a: LET c=c+a: PRINT "
   ";a;: IF a<100 THEN PRINT " ";: IF a<10 THEN
   PRINT " ";
40 POKE x,a: NEXT x: INPUT "Checksum ";ch: IF ch=c
   THEN BEEP .01,35: LET n=n+8: IF n<31204 THEN
   GO TO 20
50 IF n<31204 THEN BEEP 1,-20: PRINT FLASH 1;
   "Checksum error!"; FLASH 0;" at ";n;" C=";c:
   GO TO 10
60 IF n>31204 THEN SAVE "DemolCODE "CODE 29997,
   1210
```

```
29997:  1   22  122 122 230 7   135 135  (774)
30005:  135 79  122 220 56  6   3   203  (834)
30013:  47  16  252 177 95  122 230 192  (1131)
30021:  179 07  6   3   203 47  16  252  (793)
30029:  234 95  103 133 234 7   135 135  (1057)
30037:  135 135 135 151 203 244 14  120  (1115)
30045:  121 236 208 6   3   203 47  16   (874)
30053:  202 230 31  181 131 201 17  179  (1140)
30061:  121 6   0   130 30  45  117 20   (493)
30069:  103 19  26  111 27  58  93  117  (553)
30077:  230 7   254 0   40  40  71  76   (726)
30085:  125 203 63  203 57  16  250 30   (867)
30093:  83  117 121 58  94  117 58  92   (642)
30101:  117 230 7   71  62  0   154 71   (710)
30109:  76  125 203 33  203 39  16  236  (945)
30117:  58  42  117 58  45  117 177 30   (654)
30125:  43  117 19  19  24  15  124 58   (411)
30133:  44  117 125 58  45  117 62  0    (558)
30141:  30  42  117 19  19  197 213 205  (842)
30149:  46  117 209 193 58  44  117 71   (855)
30157:  120 128 119 35  30  43  117 71   (737)
30165:  156 168 119 35  58  62  117 71   (736)
30173:  120 160 119 58  95  117 71  30   (762)
30181:  47  117 60  30  47  117 5   120  (563)
30189:  254 0   194 112 127 201 0   0    (878)
30197:  0   0   0   42  70  30  141 92   (415)
30205:  30  72  92  33  0   0   34  64   (345)
30213:  156 34  74  156 195 170 120 62   (917)
30221:  1   58  71  156 62  10  58  75   (473)
30229:  156 203 167 13  62  0   58  72   (665)
30237:  156 240 3   22  63  0   211 204  (911)
30245:  6   31  33  0   60  42  170 119  (509)
30253:  35  110 16  251 6   21  119 17   (583)
30261:  32  0   25  120 16  240 6   84   (476)
30269:  119 43  110 16  251 6   21  119  (693)
30277:  175 237 92  62  170 110 16  247  (1107)
30285:  6   5   33  162 00  14  70  130  (456)
30293:  135 135 135 198 7   119 35  13   (777)
30301:  87  121 167 122 199 90  118 35   (934)
30309:  30  35  73  16  232 0   205 70   (389)
30317:  220 62  0   58  111 117 33  0    (581)
30325:  0   34  160 117 63  160 58  47   (519)
30333:  117 62  170 58  66  156 62  100  (793)
30341:  58  60  156 58  67  156 67  3    (612)
30349:  58  69  156 62  2   58  70  156  (615)
30357:  205 215 110 209 155 119 195 176  (1389)
30365:  119 205 215 110 58  67  130 79   (1017)
30373:  58  69  156 129 79  254 239 212  (1196)
30381:  28  119 121 254 9   228 29  119  (897)
30389:  121 58  67  156 58  68  156 79   (755)
30397:  58  70  156 129 79  230 168 204  (1094)
30405:  32  119 121 254 152 212 237 110  (1245)
30413:  126 56  68  156 121 238 0   204  (966)
30421:  0   119 30  68  156 30  47  137  (633)
30429:  58  67  156 58  93  117 33  125  (670)
30437:  121 34  168 117 205 187 117 201  (1018)
30445:  58  67  156 71  30  64  156 104  (816)
30453:  200 190 15  169 216 62  130 58   (1093)
30461:  68  156 62  254 58  79  156 209  (1071)
30469:  120 121 201 58  70  156 237 68   (1101)
30477:  58  70  156 205 209 121 201 58   (1087)
30485:  69  156 237 68  58  69  156 205  (1018)
30493:  228 121 201 58  71  156 167 202  (1196)
30501:  8   119 30  73  156 61  58  73   (598)
30509:  156 60  22  215 62  0   215 87   (794)
30517:  15  215 30  73  156 120 48  215  (970)
30525:  205 143 121 195 0   119 208 1    (991)
30533:  254 247 237 170 205 71  202 60   (1410)
30541:  119 203 79  202 121 119 201 205  (1249)
30549:  123 119 58  64  156 61  61  61   (237)
30557:  61  07  1   254 127 237 120 203  (1090)
30565:  71  164 107 119 123 214 3   87   (919)
30573:  123 254 0   219 155 119 58  64   (992)
30581:  156 175 155 119 205 155 119 58   (1162)
30589:  64  156 60  60  60  60  87  1    (558)
30597:  254 127 227 120 203 73  194 146  (1352)
30605:  119 125 190 3   97  122 254 234  (1139)
30613:  210 155 119 58  66  130 42  160  (978)
30621:  58  47  117 58  66  156 58  93   (636)
30629:  117 33  169 121 34  100 117 205  (894)
30637:  167 117 201 118 205 150 118 205  (1229)
30645:  60  119 1   254 239 237 120 203  (1241)
30653:  71  202 126 120 58  73  156 167  (967)
30661:  202 71  121 30  67  156 58  60   (681)
30669:  156 230 240 203 63  203 63  203  (1369)
30677:  63  71  17  33  8   33  0   60   (304)
30685:  29  16  252 30  67  130 230 240  (1053)
30693:  203 63  203 63  203 62  22  0    (828)
30701:  95  25  120 203 127 104 176 119  (1065)
30709:  230 30  202 176 119 203 63  203  (1253)
30717:  63  203 63  229 205 60  170 225  (1160)
30725:  62  70  119 205 8   119 58  170  (761)
30733:  93  203 87  204 38  119 58  72   (855)
30741:  156 230 140 202 89  120 195 176  (1316)
30749:  119 237 75  64  156 205 43  45   (944)
30757:  63  32  215 63  9   215 62  8    (638)
30765:  215 58  120 92  210 7   246 64   (1032)
30773:  58  194 92  205 227 95  201 237  (1301)
30781:  75  64  156 39  9   111 245 9    (690)
30789:  229 34  65  156 193 205 10  120  (1051)
30797:  241 205 160 121 58  72  156 60   (1079)
30805:  30  72  156 201 14  40  17  2    (552)
30813:  0   6   255 30  1   184 197 205  (880)
30821:  104 3   193 16  246 13  122 167  (948)
30829:  184 70  120 82  230 205 60  120  (1195)
30837:  195 22  110 205 107 13  62  2    (724)
30845:  205 1   20  42  0   211 254 195  (958)
30853:  251 120 22  10  4   60  101 199  (805)
30861:  111 100 105 116 105 111 110 32   (790)
30869:  127 32  49  57  56  54  32  60   (472)
30877:  40  93  101 119 101 114 110 22   (695)
30885:  12  9   16  4   49  45  33  76   (243)
30893:  69  70  40  32  58  45  32  82   (460)
30901:  73  71  72  54  82  25  14  7    (375)
30909:  16  5   83  60  65  67  49  45   (430)
30917:  32  66  79  79  83  80  32  60   (503)
30925:  45  32  81  95  73  44  22  20   (442)
30933:  0   16  2   19  1   80  114 101  (333)
30941:  115 115 33  69  70  84  09  32   (644)
30949:  82  116 111 32  112 106 97  121  (729)
30957:  32  56  3   60  69  77  79  76   (420)
30965:  73  84  73  79  70  46  33  135  (601)
30973:  120 6   116 126 215 35  16  251  (885)
30981:  33  160 90  42  0   6   32  119  (510)
30989:  35  16  252 62  30  38  67  156  (630)
30997:  58  60  156 62  1   58  69  156  (612)
31005:  203 30  170 63  255 58  70  156  (948)
31013:  62  0   33  0   0   38  64  130  (365)
31021:  30  71  156 209 215 110 209 150  (1170)
31029:  110 1   254 191 237 120 203 71   (1195)
31037:  202 12  110 203 103 200 118 195  (1151)
31045:  51  121 205 215 110 205 150 119  (1189)
31053:  6   10  14  0   17  58  0   46   (143)
31061:  0   97  12  197 205 191 3   175  (880)
31069:  16  242 6   44  110 16  253 1    (696)
31077:  0   0   205 61  31  195 120 120  (732)
31085:  7   234 31  240 127 234 24  24   (939)
31093:  14  112 81  130 255 215 64  2    (801)
31101:  24  0   102 0   114 0   249 0    (489)
31109:  253 0   123 0   126 0   24  0    (525)
31117:  217 14  10  6   10  197 17  1    (472)
31125:  0   96  100 209 103 3   193 16   (290)
31133:  244 13  121 167 194 144 121 217  (1321)
31141:  207 217 38  232 3   30  120 99   (936)
31149:  230 33  87  20  230 16  211 254  (1085)
31157:  43  19  124 181 194 176 121 217  (1075)
31165:  202 217 6   5   197 17  2   0    (645)
31173:  96  46  58  205 181 3   193 16   (798)
31181:  203 217 201 217 33  209 9   17   (1125)
31189:  5   0   205 181 3   217 201 217  (1029)
31197:  33  58  0   195 212 121 9   0    (611)
```

Menu Writer on Spectrum

by B E Ashley

This is a routine for Spectrum utility writers that find Menus a tedium in that it centralises the vertical text highlights the title and checks the input

Line 1120 restores Data line using variable *Data*
Lines 1130 – 1140 Print Menu heading in Bright
Lines 1150 – 1170 insert blank lines for vertical tab
Lines 1180 – 1210 print Menu options & selection number
Line 1220 prints selection request again in Bright
Line 1240 checks for valid selection

List 2 is for reference Load it to print a sample menu Any further menus simply require three lines similar to List 2
The program as written will evenly space out eight selections clearly add further Menus to increase

List 1

```
1000>REM ** MENU WRITER **
          by B E ASHLEY
1100 REM  ** MENU ROUTINE **
1110 POKE 23658,8  CLS
1120 RESTORE DATA
1130 READ P$
1140 PRINT AT 2;(32-LEN P$)/2,FN
 W$(P$)
1150 FOR N=1 TO (17-DL*2)/2
1160 PRINT
1170 NEXT N
1180 FOR N=1 TO DL
1190 READ P$
1200 PRINT  TAB 3;P$:TAB 29;N
1210 NEXT N
1220 PRINT AT 20,7;FN W$("SELECT
 < 1 TO "+STR$ DL+" >")
1230 LET Q$=INKEY$
1240 IF Q$<"1" OR Q$>STR$ DL THE
N  GO TO 1230
1250 RETURN
```

List 2

```
 190>DEF FN W$(T$)=CHR$ 19+CHR$
1+T$()+CHR$ 19+CHR$ 0

 200 REM ** SEARCH MENU **
 210 CLS   LET DATA-8500  LET DL
=6
 220 GO SUB 1000
 230 REM CONDITIONAL GOTO/GOSUB
HERE ie  GO TO 7000+500*(Q$="1")
+500*(Q$="2")etc;etc
 250 STOP
8500 DATA "SEARCH OPTIONS","BY D
ATE","BY DETAILS" "BY CATAGORY"
"BY AMOUNT" "BY REF £","MAIN MEN
U"
```

Hi-res Print on CBM 128

by Stephen Hardcastle

Here's a short subroutine which enables you to print a standard bit-map graphics screen (Graphic Mode 1) onto a CBM 1526 printer The subroutine may be included in any program provided the names of variables used in the main program don't clash

To test that you have typed the subroutine in correctly you could enter one of the graphics programs from the system guide (page 8 13 is the best in my manual) Type in the subroutine and save it, then enter and run a graphics program The hires graphics screen will remain intact providing you don't use a *Graphic Clr* command

Next just load and then run the subroutine with *Gosub 2000* if all is well then the screen will go blank and the printer come to life The printing takes a long time but the result with a good ribbon is worth waiting for

For any one with a CBM MPS 802 printer there's a good chance this program will work as it stands

```
2000 FAST
2010 OPEN 4,4,0
2020 OPEN 5,4,5
2025 OPEN 6,4,6
2040 PRINT#6,CHR$(20)
2050 FOR Y = 0 TO 24
2060 FOR X = 0 TO 38
2070 BYTE = 8192 + (X*8) + (Y*320)
2080 A$ = "" : BIT = 7
2090 FOR I = 0 TO 7
2100 DEC = 128 : COUNT = 0
2110 FOR J = BYTE TO BYTE + 7
2120 IF (PEEK(J) AND 2↑BIT) = 2↑BIT THEN COUNT = COUNT + DEC
2130 DEC = DEC/2
2140 NEXT J
2150 A$ = A$ + CHR$(COUNT)
2160 BIT = BIT-1
2170 NEXT I
2180 PRINT#5,A$
2190 FOR L = 0 TO X
2200 PRINT#4," ";
2210 NEXT L
2220 PRINT#4,CHR$(254)/CHR$(14));
2230 NEXT X
2240 PRINT#4,CHR$(13);
2250 NEXT Y
2260 PRINT#0,CHR$(36)
2270 CLOSE6
2280 CLOSE5
2290 CLOSE4
2300 SLOW
2310 RETURN
```

Fractals on Amstrad

by Martin Thomas

Here is a short program for the Amstrad machines When run it produces a stepped landscape that looks quite interesting

To be more technical it produces a three dimentional graph of a log function If the expression *Int(2*Log(x+y)* in Line 40 is replaced another view is obtained
Examples include
*Int(2*Tan(x*y)/1100))* or *(2*Am(a*Sin(x*y)/1100)*

```
10 MODE 1
20 FOR x=1 TO 40:PLOT x*10,0
30 FOR y=1 TO 40
40 DRAW(x+y/2)*10,(INT(2*LOG(x*y))+y/2)*10
50 NEXT:NEXT
```



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A musical education

Mark Jenkins looks at soma new music packages for the C643 and Atari 520

Last week we looked at a couple of guitar tutor packages omitting only to mention what machine they ran on – the C64 as it happens This week another guitar tutor program for the same machine has turned up as part of a much more complex system marketed by Colleen under the name *Music Compendium*

The *Compendium* has several sections including a Music Theory Tutor Guitar Tutor DID (sound) Chip Tutor Playalong section, Drum Machine and Sound Creator Good value for money for the price of one tape or disc you may think

The Music Theory section is in two parts covering first the stave treble and bass clefs notes on the stave ledger lines bar lines and repeats and then note values rest values time signatures ties pickup notes and accidentals If you have to learn music theory there are worse ways and the Colleen package persuades the C64 to give you musical examples as you go along It's hardly the same as having an open book in front of you though, let alone a human teacher

Still, it should be possible to pickup some basic terminology to enable you to go in to the Guitar Tutor This simply allows you to punch in any major, minor, seventh or minor seventh chord on a grid and shows you what fingers to use and where to play the chord on a guitar fingerboard The computer sounds the chord in a plunky sort of voice simultaneously and you can tune up each string of your guitar to the computer before starting

The SID chip tutor is a little odd covering most of the Pokes necessary to squeeze sounds from the C64 chip but omitting the random and envelope settings and referring only to the user's manual for any hint as to how to produce musical tuning When there's a fab book around like *Electronic Music on the Commodore 64* (author Mark Jenkins published by Sunshine Publications and where's this month's royalty statement?) it seems more fun to work through the SID chip more comprehensively yourself

The playalong section is good fun though – it produces boogie country disco or waltz backings in any key controllable from a Music Maker keybdard if you have one at a choice of three tempos

The drum machine is similarly good fun allowing you to enter 2- to 10-beat patterns of up to three voices and chain them into songs Forty bars can be created and edited and there's a good selection of swishy percussion noises

Bars and patterns can be loaded from and saved to disc and any bar may be used as many times as you like in a pattern, and can be copied or moved within the pattern

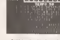
The last part of the *Compendium* the sound creator has three distinct sections the creator, combiner and effects master As these are a little complex (with the ability to create music and sound effects for your own programs) we'll take a look at them next time pausing only to remark that the Colleen package seems a good buy for those wanting a little musical education, for those who think they may be interested in music but aren't sure (remember it's not *just* about dots on a piece of page) or for those who want to use their 64 as a basic accompaniment machine for other instruments The whole compendium is available on a double-sided disc at a reasonable £29 95 and sections are also available individually

You can contact Colleen at 16 Bishop St Penygraig, CF40 1PQ or phone 0443-434848

A little more upmarket now with the latest MIDI packages from Steinberg, which is launching a whole new range at the British Music Fair at Olympia from 1st-3rd August.

Pro 24 is a 24-track MIDI sequencer for the Atari 520ST and 1040ST with 5 000 patterns 200 000 events up to 64th note quantise or real-time recording, individual note and MIDI event editing single step recording insert delete, cut append repeat punch in and out and much more For £165 it seems set to become the industry standard MIDI composer package

Pro-Creator is an editor for the Yamaha FM synths which also has the capability of creating sounds randomly down to the name displayed on the synth's LCD Cost



is £120 for the Atari version

Track Star is an eight-track MIDI sequencer for beginners on the Commodore 64/128 which includes four sampled drum sounds of bass, snare hi-hat and percussion It has four demo songs and six demo rhythms punch in and out fast forward and rewind and many other facilities, and is £70 including a MIDI interface

The *Edit Kit* for Pro 16 composer files on the C64/128 has ten octave range and complete editing facilities down to the last note and MIDI or drum event Cost is £30

It's now possible to buy *Pro 16* for the C64/128 on an Eprom with built-in interface for £177 50 and Steinberg also markets editor packages for synths from the Ensoniq Mirage Sampler to the Korg DW-6000 Contact OSC at 68 Wilsdon Way Lyne Paddock Kidlington Oxford 0865 67056

We'll be looking at some of these products in more detail in the near future

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12-13 Little Newport Street London WC2H 7PP Mark would also welcome examples of your own music on audio or program tape, or disc

Programming: Peek & Poke



Keyboard query

Mark Griffith, of Cambridge, writes

Q I am thinking of buying a microcomputer. Is there a keyboard with the Dvorak layout that I can buy to go with a PC?

A The Dvrorak keyboard layout is used to enable touch typists to go faster, it has the same number of keys as a normal keyboard but with a different layout. The idea is to put the more commonly used keys in more convenient positions. In fact the Dvorak keyboard is so similar to the normal keyboard that it may be just as easy to redefine the keys rather than invest in a new keyboard.

Superkey, from Borland (Altar Computers 041-226 4211 price £69.95) is a piece of software that will do this for you. It comes with the Dvorak layout as standard.

There are two other types of go faster keyboards that you might like to consider the Maltron and the Velotype. Both use completely different keyboard styles from the norm, Velotype allows a number of keys to be pressed at once and in contoured to fit the hands, the Maltron is contoured and has a special layout allowing the hands to be as still as possible.

Amstrad INK

P Grey of Wirral Merseyside writes

Q I recently purchased an Amstrad CPC 6128 micro computer and have been trying to come to terms with its Basic programming language. One thing that I am having a little trouble with is how the colours are placed on to the screen, in particular, what INK, PEN, and PAPER do. Could you make it a little clearer?

A To be honest, I also had a little trouble with these commands since they are not explained very clearly in the manual.

After a lot of playing around here is my understanding of how it works.

The Amstrad has 27 colours available of which a selection can be placed on the screen at any one time, depending on the screen mode. In mode 0 there can be 16, mode 1 has four, and mode has two. The colours that appear on the screen can be any from the 27 and are selected using the INK command.

The INK command can have up to three arguments INK N,C1 C2), the first of which specifies which of the 16 inks is to be assigned a colour so the command INK 2 3 assigns red (colour) to ink number 2. INK 2,3 1 assigns two colours (red and blue) to ink 2 as flashing colours (alternating between red and blue).

Once the ink has been set up, it can be used on the screen either by PAPER PEN, or graphic commands. So if ink 1 is set to blue the command PEN 1 will cause anything written to the screen to appear there in blue. Paper works in the same way with the only oddity that the paper is defined as the cell within which the character appears.

If you want to change the colour of the screen, find out which ink is currently assigned to paper and alter the colour assigned to the ink.

To sum up, the computer has a pallette of 27 colours. 15 of which can be assigned to inks these inks are then used by the PEN, PAPER and graphic commands.

The program below demonstrates how graphics can use colours and switching of colours, at the ink stage, to create simple animation.

Dvorak Keys

1 2 3 4 5 6 7 8 9 0] =
' , . p y f g c r l /)
a o e u i d h t n s - `
\ ; q j k x b m w v z

The Dvorak keyboard layout

```
10 MODE 0
20 FOR T=0 TO 15
30 INK T,T
40 NEXT
50 C=0 rem C used to define the colour
60 FOR T=0 TO 200 STEP 4
70 C=C+1
80 C=(C MOD 15)+1
90 DRAW 400-T,T,C
100 DRAW 400-T,400-T,C
110 DRAW T,400-T,C
120 DRAW T,T,C
130 NEXT
140 FOR T=0 TO 1 STEP -1
150 INK T,24
160 CALL &BD19
170 INK T,0
180 NEXT
190 GOTO 140
```

Logo lists

Graeme Watkinson of Burntwood in Staffordshire writes

Q I own an Amstrad PCW 8256 and have been trying to use the DR Logo program supplied. I have managed all right except that I cannot get the *Dot* command to function using any of the variables in the program below

```
to CURVE
make "x0
repeat 360 [make "a 60*sin. + 90[ x:a]
make "x:x + 1]
end
```

The program, which is designed to draw a simple sine curve, stops with the following error message

```
dot does not like [:x:a] as input in
```

Could you please explain this error and how this command should be used?

I would be grateful if you could also recommend the titles of one or two books which explain the language in detail

A Your problem is one of levels. The dot command needs a list of two numbers as its input, ie, *dot [10 20]*, is OK. However, unlike computer languages such as Basic the concept of variables is slightly different. What you are actually giving dot is the list [x↑a]. Logo does not immediately presume that you mean the values contained in x and a it needs to go to the next level down so you have to tell it to evaluate the list [x a] into numbers. The command for this is *list*. Try the following

```
make "x 10
make "a 20
dot list :x :a
```

This has the effect of taking x and a and forming the list [10 20] which is what dot needs to work correctly. The working version of 'curve is

```
to curve
make "x 0
repeat 360 [make "a 60 * sin :x make
"x :x + 1 dot list :x :a]
end
```

There is another example in the Amstrad manual using 'setcursor'. Logo is based of the artificial intelligence language Lisp and most of the list processing ideas (converting x a to [10 20] is a list process) are the same.

It may be an idea to have a look in your local bookshop/library for books about Logo that that suit you but some titles that may be of use are: Seymore Papert, *Children Computers and Power Ideas* (Harvester Press 16 Ship Street, Brighton Sussex ISBN 0-71080-472-5). Tony Hasemer *A Beginners Guide To Lisp* (Addison Wesley Publishing ISBN 0-2021-14634-7) which gives all the basics behind list processing relevant to advanced Logos, Harold Abelson, *Logo for the Apple II* (Byte/McGraw-Hill) one of the standard works on Logo for micros.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD

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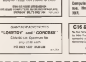
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John Cook looks through this week's new arrivals

Pick of the week

Amstrad

Program *Colossus Chess 4* **Type** Strategy **Micro** PCW 8256/8512 **Price** £15 95 **Supplier** CDS Software, Silver House Silver St, Doncaster S Yorkshire DN1 1HL

Program *Contamination* **Type** Strategy **Micro** Amstrad **Price** £9 95 (tape) £14 95 (disc) **Supplier** PSS 452 Stoney Stanton Road Coventry CV6 5DG

It s a pity this pre-production version wasn t here a couple of weeks ago everyone seemed to be down with the lurgi If only we'd had *Contamination* then

You ve seen flight simulations you ve seen business simulations – but an epidemic simulation – that's a new one from the Ere Informatique incidentally who are releasing their excellent games via PSS in this country

In an *Andromeda Strain* type scenario a constantly mutating virus has been brought to Earth via a space shot and you are in control of a team of scientists trying to contain/eliminate the virus and its virulent offspring It may sound a bit dodgy but I found the game fascinating

Admittedly, at present the game stretches my French to its equally dodgy limits, but it goes something like this

You are head of the World Health Organisation who are charged with attempting to stop the virus from killing everyone You do this by developing anti-virus preparations in your computer controlled lab then testing the potion for things like side effects – alternatively you can try them out on the population, if you feel lucky

The other side of the operation is carried out on a world map where you receive information about the virus's progress etc You can place restrictions on infected area, even nuke them if things get out of control but the latter doesn't make you flavour of the month with the locals

Naturally there's a lot more to it than that, but I think it s likely that this intriguing mix of puzzle and strategy is going to appeal to more than Amstrad owning Biochemists The English version should be ready by late July

Program *Meltdown* **Type** Arcade **Micro** 464/664 **Price** £8 95 **Supplier** Alligata 1 Orange St Sheffield S1 4WD

Program *Night Gunner* **Type** Arcade **Micro** Amstrad **Price** £7 95 (tape) £13 95 (disc) **Supplier** Digital Intergration Watchmoor Trade Centre Watchmoor Road Camberley Surrey GU15 3AJ

Program *Max Headroom* **Type** Arcadey **Micro** Amstrad **Price** £9 95 **Supplier** Quicksilva, Liberty House, 222 Regent St London W1

Program *Core* **Type** Arcadey **Micro** Amstrad **Price** £8 95 **Supplier** A&F, Liberty House 222 Regent St., London W1

Program *Nick Faldo plays the Open* **Type** Strategy **Micro** Amstrad **Price** £9 95 **Supplier** Quicksilva Liberty House, 222 Regent St , London W1

Program *ADAM* **Type** Utility **Micro** Amstrad **Price** £24 95 (tape) £29 95 (disc) **Supplier** Audiogenic, 12 Chiltern Enterprise Centre Station Rd Theale Berkshire RG7 4AA

Amstrad 6128

Program *Masterfile III* **Type** Utility **Micro** 6128 **Price** £39 95 **Supplier** Cambell Systems, 57 Trap s Hill, Loughton, Essex, IG10 1TD

Progrmm *Meltdown* **Type** Arcade **Micro** Amstrad 6128 **Price** 14 95 **Supplier** Alligata Software 1 Orange St, Sheffield S1 4DW

What's this? A dedicated 6128 game And I'll say one thing for it – it s big

Three levels of 64 rooms with six 'mini games on each one – each level linked by another game the whole thing ending with you having to write a program in a new computer language to control the core of a nuclear reactor out of control Phew! Thank heavens for the save option

But luckily, size is not the only thing going for *Meltdown* The 3-D graphics are constructed in a similar mode to *Got Dexter* – very colourful and cartoon like The action is a good mixture of puzzle solving and zapping – with your venom being directed at cybermen types and flying saucers that seem to have taken over the complex

With a reputed 180K worth of code on the disc, merely on a bytes per pound spent this would be good value Combined with the fact you ve got a highly entertaining and original arcade adventure to boot it looks like a winner

A cut down version (two levels) is available on tape for 464/664 owners, but I expect 6128 owners to go for this in a big way

Batman

Progrmm *Batman* **Type** Arcade **Micro** PCW256/PCW8256 **Price** £14 95 **Supplier** Ocean Software 6 Central Street Manchester M2 5NS

No it's not a misprint *Batman* the fabby highly acclaimed etc arcade adventure is now to be found running on the boring old Amstrad Personal Computer Word Processor – but why did it have to happen this week?

As the mighty Joe Sunshine handed me my 8512 (complete with timelocked bell and chain) I couldn't help but notice his particularly wide serene smile –the one normally seen on the face of Christian Scientists or aged Aunts half way through their third gin & orange

Personal productivity This was no computer to play games with This machine was going to make me a better person, a more productive person This piece of hardware was going to change my life

I accepted the gift with a tug of the forelock and a weak grin resigning myself to a future of gloom only to be interrupted by the odd game of computer chess And then came *Batman* I can assure you, never has the arrival of a Super-hero been greeted with such whoops of joy

I remembered the game as a great little *Knight Lore* derivative on the original machines and wondered curiously how it would convert to a text-only format It was then that various jaws hit the floor There it was Detailed 3-D graphics Wonderfully animated figures Fiendishly difficult puzzles

Whoever said it would never run games wasn't reckoning on Jon Ritman and Bernie Drummond This is just like the original (albeit extremely green) and all the more enjoyable for turning up somewhere unexpected And of course, if they can do it – so can many others

Atari

Program *Cloak of Death* **Type** Adventure **Micro** Atari 400/800/130XE **Price** £9 95 **Supplier** Bug-Byte Liberty House 222 Regent St London W1

Program *Questprobe* **Type** Adventure **Micro** Atari 800/130 **Price** £14 95 (disc only) **Supplier** US Gold The Parkway Industrial Centre, Heneage St

Birmingham, B7

Atari ST

Program *Cornerman* **Type** Utility **Micro** Atari ST **Price** £29 95 **Supplier** Microdeal PO Box 68 St Austell, Cornwall, PL25 4YS

Program *Major Motion* **Type** Arcade **Micro** Atari ST **Price** £19 95 **Supplier** Microdeal PO Box 68 St Austell, Cornwall PL25 4YB

Program *DOS Shell* **Type** Utility **Micro** Atari ST **Price** £29 95 **Supplier** Microdeal, PO Box 68 St Austell, Cornwall PL25 4YB

Program *Kissed* **Type** Utility **Micro** Atari ST **Price** £29 95 **Supplier** Microdeal. PO Box 68 St. Austell Cornwall PL25 4YB

Program *Miterm* **Type** Utility **Micro** Atari ST **Price** £29 95 **Supplier** Microdeal PO Box 68 St Austell Cornwall PL25 4YB

Program *Utilities* **Type** Utility **Micro** Atari ST **Price** £39 95 **Supplier** Microdeal PO Box 68 St Austell Cornwall PL25 4YB

BBC snd Electron

Program *Raid Over Moscow* **Type** Arcade **Micro** BBC B **Price** £9 95 **Supplier** US Gold Unit 10 The Parkway Industrial Centre Birmingham B7 4LY

There s no doubt that this particular computer game can certainly be said to have made its mark on the world In fact, I can t think of any other game that has raised the blood pressure of people playing

The storm at launch was so great that US Gold even changed the name to *Raid Well*. It a now been 'born again' under the old title on the BBC

The war against the Red Peril gets off to a poor start with two errors in the first two pages of instructions After half an hour or so the controls were sorted out and the thing showed itself to be a fair conversion of the best selling multi-screen zapper

Re any controversy this launch may re-start (I don't expect ILEA would like this run on its considerable number of BBC s, for example) if you don t like the politics, don t buy it (the ultimate capitalist sanction)

In any case, play it with your brain in neutral

Program *Star Force 7* **Type** Arcade **Micro** BBC/Electron **Price** 1 99 **Supplier** Bug-Byte Liberty House 222 Regent St London W1

Program *Questprobe* **Type** Adventure **Micro** BBC/Electron **Price** £7 95 **Supplier** US Gold Unit 10 The Parkway Industrial Centre, Heneage St Birmingham B7

Commodore 64

Program *Rupert amd the Ice Castle* **Type** Arcade **Micro** Commodore 64 **Price** £2 99 **Supplier** Bug Byte Liberty House 222 Regent St London W1

Program *Law of the West* **Type** Adventure **Micro** Commodore 64 **Price** £14 95 (disc) £9 95 (tape) **Supplier** US Gold Unit 10 The Parkway Industrial Estate Heneage St, Birmingham B7

Program *Questprobe* **Type** Adventure **Micro** Commodore 64 **Price** £9 95 (tape) £14 95 (disc) **Supplier** US Gold Unit 10 The Parkway Industrial Estate, Heneage St Birmingham B7

C16/Plus 4

Program *Ace* **type** Arcade **Micro** Plus/4 **Price** 9 99 **Supplier** Cascade Games 1-3 Haywra Cres Harrogate N Yorkshire HG1 5BG

Things are looking up for the Plus/4 *Tape 3+ 1* last week (freeing the inbuilt software from the disc drive) *Mercenary* the week before – now *Ace* from Cascade

Ace (Air Combat Emulator) saw life first on the Plus/4 s little brother, the C16, and has come full circle (or should that be loop-the-loop) via the 64 And it looks good

Very similar to the 64 version this may not be a full blown simulator, but there s enough complexity to keep most armchair Squadron Leaders happy Choose your weapon load according to your proposed target type (you get to zap planes tanks and ships in this one) don t fly too fast without your wheels down and it s scramble, scramble, scramble

There's plenty of blasting and a reasonable element of strategy too as you repel all boarders with the aid of an optional co-pilot controlling the weapon systems Another goodie

PCW 8256

Program *Colloasus Chess 4* **Type** Strategy **Micro** PCW 8256/8512 **Price** £15 95 **Supplier** CDS Software Silver House Silver St Doncaster S Yorkshire DN1 1HL

Spectrum

Program *Questprobe* **Type** Adventure **Micro** Spectrum **Price** £9 95 **Supplier** US Gold Unit 10, The Parkway Industrial Centre Heneage St, Birmingham, B7

Program *Rupert and the Ice Palace* **Type** Aracade **Micro** Spectrum **Price** £2 99 **Supplier** Bug-Byte Liberty House 222 Regent St London W1

Program *The Dragon of Notacare* **Type** Adventure **Micro** Spectrum **Price** £2 20 **Supplier** Microtech, 68 Whitley Spring Crescent, Osset W Yorkshire, WF5 0HS

Program *Treasure* **Type** Adventure **Micro** Spectrum **Price** £2 20 **Supplier** Microtech 68 Whitley Spring Crescent Ossest W Yorkshire WF5 0HS

Program *Tantalus* **Type** Arcade **Micro** Spectrum **Price** £6 95 **Supplier** Quicksilva Liberty House, 222 Regent St, London W1R 7DB

If you cast your mind back a few months Quicksilva produced a game called *Glass* – the general reaction to which was 'great graphics shame about the gameplay Now Paul Hargreaves has written another visual opus *Tantalus* and once again it s a case of donning the Foster Grants before loading

There's no doubt about it, the graphics, one way or another are well stunning, although I wouldn t recommend viewing after a hearty meal Evidently Paul is not a Habitat fan – still what about the game?

Lots of very small print on the cassette inlay about interstellar wars and mutants in the year 3027 but closer inspection reveals it to be a large zapper (1024 screens it says here) with some adventure elements thrown in

A fair amount of play has suggested this isn t really my cup of tea – the aliens (all 48 different types each well designed) just aren t vicious enough (as I speak there are 15 on screen, 14 not moving with one aimlessly wandering around as I shelter in a quiet alcove) or perhaps it s because I have difficulty identifying with my on-screen persona – a Spike Punkold

But there s no denying that a lot of effort has been put into the thing – and if you're an ardent mapper with a loathing of good interior design there s a lot here that might interest you

Program *Shape School 1 & 2* **Type** Educational **Micro** Spectrum **Price** £3 99 each or £6 99 for both **Supplier** Jodan Software 68 Dingledерry, Olney Bucks MK46 5ET

QL

Program *TechniQL* **Type** Utility **Micro** QL **Price** £49 95 **Supplier** Talent Computer Systems, Curran Building, 101 St James Rd, Glasgow G4 0NS

Charts

Top Twenty

1	(–)	Silent Service *(C64)*	Microprose/US Gold
2	(1)	World Cup Carnival *(Various)*	US Gold
3	(19)	Way Of The Tiger *(Various)*	Gremlin Graphics
4	(4)	Formula One Simulator *(Various)*	Mastertronic
5	(2)	Kik Start *(C64 C16 Atari)*	Mastertronic
6	(10)	Biggles *(Spectrum, C64)*	Mirrorsoft
7	(–)	Green Beret *(Spectrum C64, Amstrad)*	Imagine
8	(–)	Street Olympics *(C16)*	Mastertronic
9	(–)	Fingers Malone *(C16)*	Mastertronic
10	(8)	Commando *(Various)*	Elite
11	(6)	Batman *(Spectrum, Amstrad)*	Ocean
12	(3)	Thrust *(C64)*	Firebird
13	(5)	Knight Tyme *(Spectrum)*	Mastertronic
14	(–)	Kane *(C64, Amstrad)*	Mastertronic
15	(–)	Nexus *(C64)*	Nexus
16	(7)	Spindizzy *(Spectrum C64, Amstrad)*	Electric Dreams
17	(–)	Pentagram *(Spectrum)*	Ultimate
18	(8)	International Karate *(Spectrum, C64)*	System 3
19	(17)	Saboteur *(Various)*	Durell
20	(–)	Samantha Fox Strip Poker *(Various)*	Martech

Top Tens

All figures compiled by Gallup/Microscope

Amstrad

1	(–)	Kane	(Mastertronic)
2	(–)	Green Beret	(Imagine)
3	(2)	Batman	(Ocean)
4	(–)	Razzlune	(Mastertronic)
5	(–)	Tomahawk	(Digital Integration)
6	(1)	Winter Games	(Epyx/US Gold)
7	(4)	They Sold (2)	(Hit Squad)
8	(–)	Hvy On The Mgk	(Ggoyle Gme)
9	(3)	Commando	(Elite)
10	(7)	F1 Simulator	(Mastertronic)

Commodore 64

1	(–)	Silent Service	(Mprose/US Gold)
2	(–)	Way Of The Tiger	(Grem G ics)
3	(1)	Thrust	(Firebird)
4	(5)	Nexus	(Nexus)
5	(2)	International Karate	(System 3)
6	(3)	World Cup Carnival	(US Gold)
7	(9)	Bump Set Spike	(Mastertronic)
8	(7)	F1 Simulator	(Mastertronic)
9	(8)	Spindizzy	(Electric Dreams)
10	(–)	Golf Construction Set	(Ariolasoft)

Atari

1	(1)	Kik Start	(Mastertronic)
2	(2)	Vegas Jackpot	(Mastertronic)
3	(10)	Scooter	(Americana)
4	(4)	New York City	(Americana)
5	(8)	Last V8	(Mastertronic)
6	(7)	Action Biker	(Mastertronic)
7	(–)	Knight Riders	(Databyte)
8	(6)	Ollies Follies	(Americana)
9	(4)	One Man & his Droid	(Mtronic)
10	(3)	Shamus	(Americana)

BBC

1	(1)	Commando	(Elite)
2	(3)	Tennis	(Bugbyte)
3	(6)	Karate Combat	(Superior)
4	(18)	Galactic Patrol	(Mastertronic)
5	(2)	Winter Olympics	(Tynesoft)
6	(–)	Woks	(Arcana)
7	(–)	Cavey	(Bugbyte)
8	(6)	Citadel	(Superior)
9	(–)	Combat Lynx	(Durell)
10	(–)	Brant Wall	(Arcana)

Spectrum

1	(1)	Knight Tyme	(Mastertronic)
2	(–)	Biggles	(Mirrorsoft)
3	(5)	Pentagram	(Ultimate)
4	(4)	Batman	(Ocean)
5	(7)	Green Beret	(Imagine)
6	(2)	World Cup Carnival	(US Gold)
7	(3)	Ninja Master	(Firebird)
8	(6)	Hvy On The Mgk	(Ggoyle Gme)
9	(9)	Quazatron	(Hewson Consultants)
10	(–)	Molecule Man	(Mastertronic)

NEXT WEEK

● Communicating software

David Wallin presents a comprehensive buyers guide to comms software – on a host machines from the cheapest home micro to IBM business systems If you want to know what's available for your machine, don't miss it

● Learn the lingo

Continuing our series on computer languages there'll be another look at alternatives to Basic part 2 of the appraisal of Basic compilers, and a review of Comal on the Commodore 64

● Pure Magick

Tony Kendle offers a much sought after cheat routine for Gargoyle's *Heavy on the Magick*, together with other helpful Pokes and a look at the latest arcade games

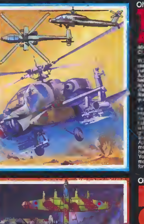
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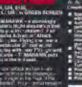
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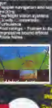
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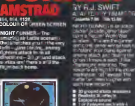


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